

CLASS 242, WINDING, TENSIONING, OR GUIDING

SECTION I - CLASS DEFINITION

Class 242 includes and is limited to:

(A) A process or apparatus for progressively winding elongated flexible material more than 360° about an axis of a take-up of restricted length, as in: (1) Unwinding and rewinding an information-bearing carrier associated with a nominal work station such as that found in a magnetic recorder/player, film projector, or camera; (2) Forming an indefinite length of running material in loops to form a bundle of coils solely by wrapping or winding the material about a form (i.e., exclusive of the use of a die or other shaping device); (3) Unidirectional winding and unwinding (i.e., simultaneously winding and unwinding material while turning in a single direction); (4) Reeling (i.e., repetitively winding and unwinding the same material); and (5) Winding by use of machine or implement for: (a) permanently winding material directly onto a core having distinct ends to create a composite article exclusively by winding; (b) winding material, usually strand, in a helical or random manner to form a storage coil for subsequent unwinding; or (c) winding material, usually web, in a convolute manner to form a storage coil for subsequent unwinding;

(B) A storage coil formed exclusively by such a winding process or apparatus;

(C) A process or apparatus limited to unwinding material from a storage coil;

(D) A process or apparatus for tensioning (i.e., applying or regulating longitudinal stress in a running material of indeterminate or indefinite length);

(E) A process or apparatus for guiding (i.e., establishing or confining the path of movement of a running material of indeterminate or indefinite length); or

(F) A subcombination peculiar to winding, unwinding, tensioning, or guiding, such as a spool, spindle, mandrel, or dispenser.

SECTION II - NOTES TO THE CLASS DEFINITION

- (1) Note. A process is placed with the apparatus for its practice.

- (2) Note. Class 242 provides for a “coil holder” whose structural significance is generally concentric to a coil axis to support wound material and includes a spool, spindle, mandrel, dispenser, or container with a specific coil support. There is a natural similarity between a coil holder, reeling device, winding machine, and unwinding machine.

For example, a support rack from which a stock material coil is unwound, even with a rewinding handle to rewind surplus material, should be placed with coil holder because of primary, overall similarity of structure and function.

Similarly, a coil support for dispensing material by simply pulling on a free material end is placed with coil holder unless the coil support includes additional significant unwinding structure expressly provided for as an unwinding machine. Examples of such additional structure provided for as an unwinding machine are means for attachment of a material to a preceding material, a mobile unwinding station, supply replenishment structure, reserve coil storage, a material end separator, a detector, indicator, or control, a drive, an unwinding limit, or a specific unwinding guide/guard.

- (3) Note. Class 242 does not provide for a process or apparatus for: (a) Winding onto articles of indefinite length, such as a hose conductor or other elongated member without distinct ends; (b) Winding of a line having a detachable load except when placement or storage of the line in a coiled state clearly establishes a precedent to Class 242 as in the case of: (1) a fishing reel, seatbelt reel, or similar reeling device, and (2) a component of a reeling device such as a drum, material distributing guide, etc.; (c) Unwinding combined with cutting, tearing, perforating, etc.
- (4) Note. A tensioner or guide claimed in terms of a composition of material or treatment with no significant tensioner or guide structure will be classified with the appropriate material or material treatment class.

- (5) Note. Figure eight winding on a support is considered winding proper for Class 242 if it forms at least one complete cycle or figure eight on the support.

SECTION III - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

STRUCTURE OF CLASS 242

See References to the Current Class, below, for a list of related subclass groups of Class 242.

Subclasses 118 - 159, 163 through 178, and 222 have not been screened for hierarchical priority within Class 242, and should be carefully reviewed to assure a complete search of the prior art particularly with a search relating to: (a) unidirectional winding and unwinding, (b) tension control or brake, (c) unwinding machine, (d) coil holder, or (e) guide.

LINES BETWEEN CLASSES 83, 225, AND 242

Class 83 and related Class 225 take unwinding and cutting, severing or breaking, whereas Class 242 takes a similar operation accompanied by winding.

LINE BETWEEN CLASS 182 AND CLASS 254

Reeling devices in Class 182 are generally of the type provided for in a Class 254 hoist because they accept a load.

LINE BETWEEN CLASS 206 AND CLASS 242

A coiled material enclosed in a box or covering sheath can be provided for in Class 206 (e.g., subclasses 389+), if the disclosure indicates that either: (a) the coil is separated from the receptacle or package for winding or unwinding, or (b) the sheath about the coil is punctured to permit unwinding. However, Class 242, subclasses 588+ would be more appropriate if either: (a) the material is unwound from the coil while in the receptacle, or (b) if a formed unwinding aperture indicates a capacity for use of the package contents without destroying the package. Note particularly Class 206, subclasses 53 through 55, 225 through 227, 389+, and 574.

LINE BETWEEN CLASS 211 AND CLASS 242

See Class 211, Supports: Racks, particularly subclasses: (a) 1.52+ for a power-operated article support adapted to

be repositioned relative to a loading station, which article support may be analogous to a coil or core so positioned in Class 242, subclasses 533+ and 558+; (b) 44 for a rack for a bolt or card of wound material that may be removed for unwinding; and (c) 119.15 for a line tightener that may be analogous to Class 242, subclasses 388.2+ for a similarly functioning structure.

LINE BETWEEN CLASS 224 AND CLASS 242

See Class 224, Package and Article Carriers, subclass 162 for a support constructed to be borne by a living being which is particularly analogous to Class 242, subclass 404.1.

LINE BETWEEN CLASS 226 AND CLASS 242

See Class 226, Advancing Material of Indeterminate Length, which may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel driving or reel stopping means, etc.), subclasses 168+ for orbitally traveling material-engaging surface(s), subclass 195 for means to retard material movement or subclass 196.1 for a passive guide combined with a material feeder. Class 242 currently provides for a "strand tensioning device" in subclasses 147+, a "strand guide" in subclasses 157+, a "tension control or brake" in subclasses 410+, and a "material guide or guard" in subclasses 615+ which conflict with Class 226 subclasses 168+ and 195. Plans are underway to resolve this conflict by making Class 242 subclasses 157+, 410+, and 615+ the residual location for their respective features, with Class 226 subclasses 168+ and 195+ being limited to their respective features combined with a material feeder. This has already been resolved for Class 226 subclass 196.1.

LINE BETWEEN CLASS 360 AND CLASS 242

Class 360 provides for claimed information erasure prevention means (other than a nominally recited pin or filler), details of a single recording element (e.g., a multitrac transducing head), means to extract a loop of tape from the cartridge and transfer the loop about a named transducer head, a plurality of elements peculiar to a recorder (e.g., alternately engageable record and erase heads), or structure peculiar to a recorder completely remote from winding, tensioning, or guiding (e.g., signal volume control). Search Class 242 for unwinding/rewinding drives, and subcombinations such as cartridge/cassette structure and related perfecting feature; e.g., position retainers, brakes, brake release devices, door structures, pinch rollers, guide components, car-

tridge/cassette housing construction and material having a specific composition, hardness, thermal property, electrical property, antistatic property, etc., particularly subclasses 324+ for unwinding and rewinding an information convertible carrier and 335+ for guiding, unwinding, or rewinding a carrier stored in a cartridge/cassette.

RELATED SUBCLASS GROUPS OF CLASS 242

References to the Current Class, below, represents a list of related subclass groups of Class 242. An asterisk denotes a position variation from the actual position in the present, interim schedule.

SECTION IV - SUBCLASS REFERENCES TO THE CURRENT CLASS

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 159, through 178, WOUND STORAGE PACKAGES
- 324, through 358.1, UNWINDING AND REWINDING A MACHINE CONVERTIBLE INFORMATION BEARING CARRIER (E.G., MAGNETIC TAPE OR PHOTOGRAPHIC FILM)
- 360, through 363, LOOP FORMING
- 364, through 364.3, UNIDIRECTIONAL WINDING AND UNWINDING
- 47.01, through 47.13, *Unidirectionally moving (cordage) coils
- 370, REELING DEVICE
- 223, through 323, Fishing rod reel
- 371, through 385.4, Spring-powered reel
- 386, through 407.1, General use reel
- 410, through 423.2, TENSION CONTROL OR BRAKE
- 147, through 156.2, *Strand tension device
- 430, through 448.1, COMPOSITE
- 470, and 471, HELICAL OR RANDOM WINDING MACHINE
- *16 through 46.8, *Spoolers, bobbin or cop winding
- *47, 48 through 53 *Cordage winding
- 520, through 548.4 CONVOLUTE WINDING MACHINE (E.G., FABRIC)
- 550, through 566, UNWINDING MACHINE
- 570, through 614.1, COIL HOLDER OR SUPPORT
- 118, through 146, *Strand spools and holders
- 222, *Card, board, or form
- 615, through 615.4, GUIDE OR GUARD
- 157, through 158.5, *Strand guide or distributor

899, MISCELLANEOUS

SECTION V - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

- 4, Baths, Closets, Sinks, and Spittoons, for a specified plumbing fixture that may be combined with winding or reeling structure, for example, in subclasses: (a) 243.1 for a rolled package of toilet seat covers; (b) 300.1 and 244.1+ for a dispenser of toilet tissue or seat covers combined with a flush closet; and (c) 502 for a pool accessory having a specific rolled pool cover.
- 8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclasses 151+ for a winding, unwinding, or reeling device for positioning running material with respect to a specified fluid treatment process or apparatus.
- 15, Brushing, Scrubbing, and General Cleaning, for a winding, unwinding, or reeling device combined with a specified brush or other cleaning device designed to clean material as it is wound or unwound (e.g., subclasses 256.5+ and digest 13).
- 19, Textiles: Fiber Preparation, coreless winding of a group of textile fibers prior to the formation of the fibers into a twisted strand, in contrast with Class 242, which provides for winding such a fiber around a spindle or spool. Particularly note subclasses: (a) 149 for depositing a specific sliver (strand of loose, untwisted fibers) onto an article or facsimile article, and (b) 159 for depositing a specified sliver into an open can.
- 24, Buckles, Buttons, Clasps, etc., for a specified clasp combined with a coiled tethering line in subclasses 3+ (e.g., a tethered pen), and subclasses 115+ for a fixture for holding cord or rope.
- 26, Textiles: Cloth Finishing, subclasses 71+ for cloth finishing that may include a guide structure.
- 28, Textiles: Manufacturing, for textile operations that may include or be analogous to winding, tensioning, or guiding, particularly subclasses: (a) 141 for a specific textile fabric splicer; (b) 176 for winding or unwinding a warp thread sheet (group of parallel threads); (c) 194 for tensioning combined with warp preparation or

- handling; and (d) 195 for traversing (distributing) combined with warp preparation.
- 29, Metal Working, which may combine winding, tensioning, or guiding of elongated flexible material with additional manufacturing such as shaping or assembly, particularly subclasses: (a) 25.41+ for making a condenser that may include winding or unwinding; (b) subclass 452 for prestressing or tensioning a static or running filament or strand in a manufacturing operation; (c) subclasses 596, 598, 605, and 618 for making an electrical device that includes a manufacturing operation in addition to winding; (d) subclasses 732+ for motor/generator winding apparatus combined with additional manufacturing apparatus; (e) subclass 780 for assembly of parts to running length of a workpiece by orbital member, which may include wrapping; (f) subclass 806 for assembly apparatus for a film or tape cartridge; and (g) subclass 894 for a process for making a wheellike element, which may be analogous to formation of a spool or winding drum.
- 30, Cutlery, subclass 127 for a twine guide combined with a specified cutter.
- 33, Geometrical Instruments, for instruments that may include reeling apparatus as a component of a specifically claimed geometrical instrument such as a measuring tape. Class 242 provides for a nominal recitation of elongated geometrical instruments such as a tape, line, or typical display. Note particularly subclass 393, 413+, 713+, 754, and 761+ for a reeling device combined with a specific straight edge cord (chalk line) or flexible distance measuring element (e.g., measuring tape).
- 34, Drying and Gas or Vapor Contact With Solids, subclass 117, 118, and 153, which may include a reeling device or guide for handling strand or web subjected to a specified Class 34 art process or apparatus.
- 38, Textiles: Ironing or Smoothing, particularly subclass 102.21 for a winding device using supply and take-up spools between which cloth is stretched (e.g., to smooth fabric quilting).
- 40, Card, Picture, or Sign Exhibiting, particularly subclass 116, 117, 347, 348, 385+, 470+, 483, 514+, 518+, and 529 for an unwinding/rewinding or reeling device combined with a specific register, file, or changing exhibitor. Specifying either a detail of the exhibited medium, or a structure to display or project the medium (e.g., light source, mirror, etc.), justifies placement in Class 40; however, a specified intended use will not bar placement in Class 242. Subclasses 341+ for a copyholder where the copy is advanced relative to a static guide by manual force applied directly to the copy, or to guide or advance material relative to a viewing locus; or an indicator (e.g., line guide or pointer) relative to the copy and a support therefor.
- 43, Fishing, Trapping, and Vermin Destroying, for a process and apparatus particularly designed for capturing fish that may involve a winding or guiding device as a component, particularly subclasses: (a) 8, for net handling apparatus; (b) 20, 21, 25, 26.1, 42.28+, and 57.3, for a reeling device combined with specified apparatus useful in capturing fish (e.g., an angling rod, "downrigger", or "trotline" hook holder); and (c) 24, for a line guide mounted on a specified angling rod. Placement in Class 43 generally requires that the winding, tensioning, or guiding device be specifically limited to fishing, trapping, etc. For example, a "downrigger" (trolling depth device) can be properly considered a reeling apparatus with a guide boom to position the line until line-carried equipment, a boat mounting, bait positioning, measuring, or sampling equipment is specified in a claim.
- 52, Static Structures (e.g., Buildings), particularly subclass 108 for a device for unwinding strand, web, or connected sections specified as a building component material. However, Class 242 can accept either: (a) winding or unwinding material used in preliminary fabrication of a building component where the material is defined as a typical elongated material, or (b) prestressing a pipe or vessel by simply wrapping a tensioned cable around a body to reinforce same.
- 53, Package Making, particularly subclass 430 and 118+ for winding package contents, and subclasses 409, 587, 588, and 203+ for forming or covering a package that may include winding.
- 57, Textiles: Spinning, Twisting, and Twining, particularly subclasses: (a) 58.67+, 71, 78, 92, 98, 99, 303, 305, and 313 for a helical winding/unwinding device that additionally provides a twisting or related function, and (b) 3 through 18 for wrapping elongated material onto an indefinite-length core by equipment and/or a process similar to lathe-type winding of a short article found in Class 242. The fundamental distinction between Class 57 and Class 242 in covering or winding articles is that Class 57 provides for winding an article (core) of indefinite length or any length with twisting, whereas

- Class 242 winding is limited to an article or core of definite (relatively short) length (i.e., with distinct, spaced ends).
- 65, Glass Manufacturing, subclass 10.1 for winding combined with a specified glass-making operation or subclasses 182.1+ for a fluid support means for an article or preform.
- 66, Textiles: Knitting, particularly subclass 126, 130, 146, 151, and 158 for a strand control device (e.g., a guide or tensioner), in a specified knitting process or apparatus.
- 68, Textiles: Fluid Treating Apparatus, subclass 198 for a hollow coil holder associated with fluid treatment means.
- 72, Metal Deforming, appropriate subclasses, particularly 135+, 146+, 183, 288, and 289 for coiling elongated metallic material that additionally bends the metal beyond its elastic limit. With respect to winding, Class 242 and Class 72 contain patents where a material being worked is disclosed as being held to a mandrel or core and wound thereon due to the interaction of (a) a force rotating the core and (b) a force restraining the material to movement along a course substantially tangential to the surface of the core or the wound product. A patent disclosing such a force applied to metal and claiming use of a deflector closely adjacent to the core will be placed originally in Class 72 unless the specification clearly teaches that the metal is not deformed beyond its elastic limit. Patents disclosing such forces applied to metal, wherein the restraining force is claimed as means, remote from the core for retarding movement of the work (tensioning) will be placed originally in Class 242 unless the disclosure positively stresses deformation of the metal. With respect to unwinding, a patent wherein metal is unwound from a coil will be placed originally in Class 72 only if a claimed disclosure positively teaches deformation or stress beyond the elastic limit, as by the use of a deflector or tensioning means.
- 74, Machine Element or Mechanism, particularly subclasses: (a) 22+ for mechanical movements of general application that may be appropriate to or a subcombination of a winding/unwinding machine or reeling device (e.g., for distributing material being wound); (b) 543+ for a general purpose handle; and (c) 575+ for a pawl and ratchet device of general use. Generally, Class 74 provides for a generic gearing arrangement or mechanical movement subcombination that can include a component of a winding or reeling device, such as a means to index a core or guide of a winding or reeling device so long as the actual winding output is not specifically required. However, an exception exists for handles and one-way devices expressly provided for in Class 242.
- 76, Metal Tools and Implements, Making, subclass 81.4 for a spring-biased strop retractor in a specified tool/implement making machine or process.
- 82, Turning, particularly subclass 169 for an expandable mandrel for a turning lathe that may grip a workpiece in a manner similar to a winding machine supporting a take-up mandrel.
- 83, Cutting, particularly subclasses 78+, 102+, 302, 426+, 909, 920+, 937, 949, and 950 for cutting material unwound from a coiled supply as well as cutting in general. (See Lines to Other Classes and Within This Class for the lines between Classes 83, 225, and 242.)
- 84, Music, particularly subclasses 122+, 132, 133, and 150 for a winding/unwinding device combined with specific music technology (e.g., particular sheet structure or tracking board).
- 87, Textiles: Braiding, Netting, and Lace Making, subclass 31 and 59 for a winding device or tensioning means combined with specific Class 87 technology.
- 100, Presses, particularly subclass 12, 13+, 76, and 79 for a specified press that may include either: (a) applying a binder or covering subject to be wrapped, tensioned, or guided, or (b) utilizing a binder or cover from a supply that can be coiled.
- 101, Printing, for convolute winding or unwinding combined with structure peculiar to printing (e.g., a printer head or antismut device).
- 111, Planting, subclass 44 and 45 for a reeling device used with a special line adapted to actuate a planting drill seeder at selected intervals.
- 112, Sewing, for winding, tensioning, or guiding combined with a specified sewing process or apparatus; particularly subclasses 136+ for a work manipulating guide, subclasses 254+ for thread tensioning, subclass 261 for a guard, subclass 279 for bobbin winding, or subclasses 302 for a thread guiding or handling means.
- 114, Ships, subclass 254 for a line storage reel for a towing cable in ship structure.

- 116, Signals and Indicators, particularly subclass 305 for a specific alarm or indicator without specified detail of a winding, unwinding, tensioning, or guiding structure.
- 118, Coating Apparatus, subclass 33 for tensioning, and subclasses 229 and 235 for winding/unwinding combined with a specified coating means.
- 119, Animal Husbandry, subclass 794 and 796 for a reeling device for a specific animal tethering line, collar, harness, or the like.
- 137, Fluid Handling, particularly subclasses 355.16+ for a hose reel combined with a specified connection between a fluid supply and a hose.
- 138, Pipes and Tubular Conduits, appropriate subclasses for details of pipe structure that may bear upon a winding method or apparatus by which the pipe was made.
- 139, Textiles: Weaving, for a cloth-weaving process or apparatus, particularly subclasses: (a) 200, 201, and 212+ for a tension-regulating means to control the weft (filling or transverse yarn of a woven fabric, and (b) 304+ for a fabric take-up that may include winding.
- 140, Wireworking, for a process or apparatus for operating on wire usually involving by disclosure bending the wire beyond its elastic limit, particularly subclass 71.5, 92.1, 92.2, and 124 for winding material, usually wire, disclosed as being wound on an intermediate form for subsequent removal as a convolution or bundle of convolutions to form an article (e.g., stator, armature, or light filament). However, when winding into a storage coil from which the wire is to be subsequently unwound it is necessary that a claim specify that the wire is bent beyond its elastic limit or subject to some other wireworking action.
- 144, Woodworking, subclass 14 for apparatus for making a spool from wood or similar material, and subclass 268 for a coiling former for wood bending.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, for: (a) winding an article such as a ball or pipe claimed in combination with the use of a bonding agent, and (b) bonding the ends of material together to provide a continuous material that may be used in a winding or unwinding process in general. However, Class 242 provides for: (a) winding similar articles even those disclosed with bonding so long as the bonding is unclaimed, and (b) joining ends of unwinding material together including joining by bonding when such joining is claimed in combination with manipulation of an expiring or fresh supply coil. Note particularly, subclasses: (a) 51+ for a process of covering an electrical conductor; (b) subclasses 143+ for a process of helically winding and bonding a wire to reinforce a flexible tube; (c) subclasses 169+ for a process of winding and bonding a stressed web into a laminae; (d) subclasses 180+ for a process of winding and bonding a filamentary material to form an article; (e) subclasses 184+ for a process of winding and bonding a web or sheet; (f) subclasses 405.1+ for apparatus for bonding combined with feeding; (g) subclass 422 for apparatus for winding tire bead; (h) subclasses 425+ for apparatus for progressive helical winding material combined with bonding; (i) subclasses 443+ for winding or wrapping apparatus used to wind and bond material to articles (e.g., balls); and (j) subclasses 504+ for apparatus for end-to-end splicing of web materials.
- 160, Flexible or Portable Closure, Partition, or Panel, particularly subclass 55, 120+, 170+, and 238+, especially subclasses 252, 263, 266, 307, 309, 313+, 319+, and 383+ for winding and unwinding to position specified retractable closure structure or related panels.
- 162, Paper Making and Fiber Liberation, subclasses 118+ and 283+ for a process using interfelted fibers in a liquid suspension to form a web wound or wrapped upon itself.
- 178, Telegraphy, subclass 42 for guide or feeding structure combined with a specified recorder or printer of a telegraph system.
- 180, Motor Vehicles, subclass 7.5 for a vehicle-mounted towing winch, and subclasses 268+ for a reeling device for a seatbelt or harness combined with a controller that is a component of a motor vehicle (e.g., an ignition switch).
- 182, Fire Escape, Ladder, or Scaffold, particularly subclasses 73+, 231+, and 237 for a reeling device for positioning a specified body harness or supple escape device (e.g., a rope ladder), for use as a fire escape frequently combined with an unwinding control or brake. (See Lines With Other Classes and Within This Class for the line between Class 182 and Class 254.)
- 185, Motors: Spring, Weight, and Animal Powered, subclasses 27+ for a weight motor and subclasses 37+ for a spring motor as a subcombination or of general use.

- 187, Elevator, Industrial Lift Truck, or Stationary Lift for Vehicle, subclasses 254+ for a winding or traction drum in combination with elevator structure.
- 188, Brakes, for details of a brake, per se, or in generalized combinations, particularly subclasses 65.1+ for a brake specifically adapted to completely halt the movement of a strand, and 82.1+ for a one-way brake.
- 191, Electricity: Transmission to Vehicles, subclasses 12+ and 91 for a reeling device combined with a windable conductor and means providing electrical connection through the conductor to a vehicle.
- 192, Clutches and Power-Stop Control, for a detail of a power-stop, clutch-brake combination, or clutch, per se, or in general use.
- 198, Conveyors: Power-Driven, subclasses 813+ for an endless belt conveyor tensioner.
- 200, Electricity: Circuit Makers and Breakers, particularly subclasses: (a) 61.13+ for a specific switch designed for operation in response to a condition in either a running length of material or a spool or guide associated with the material, and (b) 61.58 for a switch designed to be associated with a seatbelt.
- 206, Special Receptacle or Package, particularly subclasses 387.1+ and 389+ for a packaged coil of wound material in which the disclosure indicates that winding, or more frequently unwinding, occurs with either: (a) the coil dis-associated from a particular receptacle or package (e.g., box, storage tube, bag, or binder), or (b) a cover, wrapper, band, or other packaging material where a pay-out aperture seal is destroyed (irreversibly modified) as a prerequisite to winding or unwinding. A coiled material enclosed in a box or covering sheath can be provided for in Class 206 (e.g., subclasses 389+), if the disclosure indicates that either: (a) the coil is separated from the receptacle or package for winding or unwinding, or (b) the sheath about the coil is punctured to permit unwinding. (See Lines With Other Classes and Within This Class for discussion of the line between Class 206 and Class 242.)
- 211, Supports: Racks, particularly subclasses: (a) 1.52+ for a power-operated article support adapted to be repositioned relative to a loading station; (b) 44 for a rack for a bolt or card of wound material that may be removed for unwinding; and (c) 119.15 for a line tightener. See Lines With Other Classes and Within This Class for a discussion of the line between Class 211 and Class 242.
- 220, Receptacles, for a receptacle detail that may be analogous to a tape or film cartridge provided for in Class 242.
- 223, Apparel Apparatus, subclasses 106+ for a stand, rack, or other holder particularly designed to hold a sewing accessory that may include a thread spool.
- 224, Package and Article Carriers, subclass 162 for a support constructed to be borne by a living being. See Lines With Other Classes and Within This Class, for the line between Class 224 and Class 242.
- 225, Severing by Tearing or Breaking, for unwinding with subsequent severing, Class 225 severing being limited to tearing or breaking. Class 242 provides the reverse, namely, severing with subsequent winding. Note particularly subclass 10, 23+, 34+, 51, 53, 56+, 63+, 76, 88, and 106 of Class 225.
- 226, Advancing Material of Indeterminate Length, may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel driving or reel stopping means, etc.), subclasses 168+ for orbitally traveling material-engaging surface(s), subclass 195 for means to retard material movement or subclass 196.1 for a passive guide combined with a material feeder. (See Lines With Other Classes and Within This Class for a discussion of the line between Class 226 and Class 242.)
- 235, Registers, particularly subclass 5 and 475+ for an unwinding coil (e.g., tape), combined with register structure.
- 239, Fluid Sprinkling, Spraying, and Diffusing, particularly subclass 34, 52, 195+, 736, and 745 for a reeling device combined with a specified fluid coupling to a fluid distribution system.
- 244, Aeronautics, subclass 122 for a reeling device for a seatbelt combined with specified aeronautic construction, and subclass 155 for a kite with a tether line reel.
- 248, Supports, particularly subclass 75, 266, 329, 330.1, and 492 for a reeling device combined with certain specified supports (e.g., a support for a hose, shade rod, cord spool, or picture or mirror).
- 249, Static Molds, subclasses 178+ and 184+ for expandable cores in a molding process or apparatus.

- 250, Radiant Energy, for details of items and components used in radiant energy apparatus such as a photocell or photocell circuit that may be useful in winding, unwinding, or tension controls.
- 254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclasses 264+ for a hoist or winch provided with a control, motor, transmission, brake, clutch, or the like to haul or elevate a disconnectable load, and subclasses 389+ for a guide for a load bearing cable.
- 267, Spring Devices, for details of a spring, per se, and of general use.
- 271, Sheet Feeding or Delivering, for details of feeding or aligning material that may be appropriate to winding, unwinding or guiding.
- 273, Amusement Devices: Games, Dig. 21 for a reeling device used, for example, in combination with a tethered ball.
- 279, Chucks or Sockets, particularly subclasses 2.01+ for an expandable work grasping device that may be rotatable for purposes other than winding material for storage.
- 280, Land Vehicles, particularly subclasses 47.131+ for details of wheelbarrow or hand truck structure of general use that may be appropriate to supporting reeling structure or servicing winding or unwinding equipment, subclass 480.1 for a reeling device to retract a tow line into a specified vehicle structure, and subclasses 290 and 807 for a reeling device to retract seatbelt or harness combined with specified land vehicle structure.
- 289, Knots and Knot Tying, particularly subclasses 13 through 15 for a cord holder or guide combined with knot tying apparatus.
- 294, Handling: Hand and Hoist-Line Implements, particularly subclasses 137+ for details of an article carrier of general use adapted to be gripped and carried by hand.
- 297, Chairs and Seats, particularly subclasses 221+ for a cover dispenser peculiar to a chair, and 475+ for a reeling device for a seatbelt or other restraint incorporated with specified seat structure.
- 303, Fluid-Pressure and Analogous Brake Systems, for details of brakes and speed regulating means of general use.
- 307, Electrical Transmission or Interconnection Systems, for details of electrical control systems.
- 310, Electrical Generator or Motor Structure, particularly subclasses 179+, 254+, and 261+ for details of a wound motor or generator component.
- 312, Supports: Cabinet Structure, particularly subclass 34.6 and 34.8+ for particular cabinet structure designed for rolled material. A cabinet which includes specific housing construction details and is adaptable to general use support or containment as well as winding can be classified as an original in Class 312.
- 318, Electricity: Motive Power Systems, particularly subclass 6 and 7 for a tension-maintaining system in general use, and subclasses 362+ for an electrically controlled brake of general use.
- 324, Electricity: Measuring and Testing, for details of a measuring system using an electrical property that impacts a detector, stop control of a winding, unwinding, or tensioning process or apparatus, particularly subclasses: (a) 207.11+ for length of material measurement; (b) 209 for stress in material measurement; (c) 546 through 549 for a certain electrical article fault detector; and (d) 600+ for impedance and related measurement.
- 334, Tuners, particularly subclass 38 for a tuner that includes winding/unwinding means, and subclasses 71 and 75 for a tuner detail that may impact the process or apparatus used to originally make the tuner by winding.
- 335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, particularly subclasses 209+ for details of a magnetic article frequently made by winding that may impact the process or apparatus by which the article was wound.
- 336, Inductor Devices, for details of an inductive article frequently made by winding that may impact the process or apparatus by which the article is made, particularly subclasses: (a) 15, which may include winding or unwinding, and (b) 192, 199+, 213, 225+, and 234 for coil structure.
- 338, Electrical Resistors, for details of an electrical article frequently made by winding that may impact the process or apparatus by which the article is made, particularly subclasses: (a) 79 for a mechanically variable resistor that includes winding or unwinding, and (b) 296+ for a helical or wound resistor element.
- 340, Communications: Electrical, for details of a signal, alarm, or other indicator that may be responsive to a condition significant to winding/unwinding or tension, particularly sub-

- classes: (a) 665+ for a stress or force actuated indicator, and (b) 675 and 677 for an indicator actuated in response to web or strand movement.
- 343, Communications: Radio Wave Antennas, especially subclass 877 and 903 for a particularly specified antenna wound onto a reeling device.
- 346, Recorders, particularly subclass 24 and 136 for a winding or reeling device in combination with a particularly specified recorder (e.g., a wound scale moved past a recorder inking pen).
- 352, Optics: Motion Pictures, for winding and unwinding in combination with particularly specified optical or motion picture structure. Class 242 is established to collect technology centered on refinements of winding, unwinding, tensioning, and guiding to discourage parallel development of winding/unwinding technology in each of several special technologies based on a nominal work station. Accordingly, Class 242 provides for inventions in winding and unwinding for motion picture apparatus where an element such as a lens, gate, shutter or equivalent motion picture structure is named as a part of the winding or reeling path. However, a recitation in a claim of either: (a) details of a single motion picture element (e.g., a multilens focus station), or (b) a plurality of motion picture elements recited that would establish an optical or mechanical cooperation between the plurality of elements (e.g., a feed claw fore and aft of a lens) or structure completely remote from the film winding path (e.g., a humidifier) will bar original placement in Class 242. Search this class, particularly subclasses: (a) 72 through 78 for a film cartridge with specified projector related construction; (b) subclass 124, 128, and 156 for winding/unwinding structure with particular projector structure; (c) subclasses 173 through 175 for film feed structure in a projector; (d) subclass 224 for a film guide of a projector; and (e) subclass 243 for a film support in a projector.
- 355, Photocopying, for material unwinding, feeding or guiding in combination with specified photocopy apparatus.
- 356, Optics: Measuring and Testing, particularly subclasses 238.1+ for a detector or stop combined with optical measuring or inspection.
- 360, Dynamic Magnetic Information Storage or Retrieval, for winding or guiding of a magnetic medium in combination with claimed magnetic recording or reproducing apparatus (i.e., transducing head details or closely related structure that impact the transducing function unique to this art). (See Lines With Other Classes and Within This Class for the line between Class 360 and Class 242.)
- 362, Illumination, particularly subclass 258, 387, and 407 for a reeling device for an electrical conductor combined with a light source.
- 378, X-Ray or Gamma Ray Systems or Devices, subclasses 182+ for a sheet film cassette combined with a specified X-ray or gamma ray device.
- 384, Bearings, various subclasses for a specified bearing for structure that may include a positively claimed winding, unwinding, tensioning, or guiding element up to a detail where the element is positively, structurally limited to a winding device distinct from a generalized spindle, roller or the like.
- 385, Optical Waveguides, subclasses 100+ for a particular filament construction of an optical waveguide cable.
- 396, Photography, for particular camera structure and film treating apparatus that may include a film support, guide, feed, or wind/unwind device. Class 242 provides for such structure in which a camera structure or fluid treatment component is nominally recited (e.g., any one of a film winding/rewinding means, feeder, guide rails, supply/take-up stations, or container), but does not provide for multiple, dissimilar camera structures or components or a single, specific component. Search this class, subclasses: (a) 284+ and 387+ for film winding or feeding in specified camera structure; (b) 511+ for a detachable or removable filmholder for particular camera structure; and (c) 585, 599+, 612+, 642+, 645, and 649 for winding related structure combined with film treating apparatus.
- 399, Electrophotography, subclass 165 for alignment or tensioning a photoconductive belt and subclasses 361+ for document handling (e.g., feeding, delivering, or guiding originals or copies within an electrophotos:graphic device), particularly subclasses 375 and 384 for continuous roll or fanfold.
- 400, Typewriting Machines, for the combination of a typewriter and winding/unwinding, tensioning, or guiding component, particularly sub-

- classes: (a) 242, 512, 609+, and 613+ for mounting means for a spool or roll; (b) 248, for a ribbon guide combined with specified typewriter structure; and (c) 578+ for a web feeding mechanism combined with specified typewriter structure.
- 401, Coating Implements With Material Supply, for winding, tensioning, or guiding combined with specified coating means (e.g., subclass 13 for a paper dispenser combined with a specific writing implement).
- 402, Binder Device Releasably Engaging Aperture or Notch of Sheet, subclass 10 for a reeling device for applying tension to a pliant sheet retainer (e.g., a strap).
- 414, Material or Article Handling, subclass 24.6 for a hay bale unrolling device, and subclasses 910 through 912 for details of material handling apparatus that may be appropriate to core and coil loading.
- 425, Plastic Article or Earthenware Shaping or Treating: Apparatus, for forming an article by molding, particularly subclass 802 for cable or tube splicing and Dig. 7 for coil forming.
- 427, Coating Processes, particularly subclass 116 for a process for coating a coil or winding and subclasses 171+ for coating combined with stretching or tensioning.
- 428, Stock Material or Miscellaneous Articles, for materials suitable for numerous winding, tensioning, and guiding applications. In a situation where a guide structure is defined basically in terms of the material from which it is composed, the guide should be originally classified in the appropriate material class. Note subclass 694 and 695 for specific recording media and Cross-Reference Art Collection 906 relating to a roll or coil.
- 433, Dentistry, subclass 78 for a retractable hose in a specified dental storage cabinet.
- 434, Education and Demonstration, subclass 412 for a reel-mounted sheet having an erasable surface.
- 441, Buoys, Rafts, and Aquatic Devices, subclasses 23+ for a reeling device used to tether a specified buoy.
- 446, Amusement Devices: Toys, particularly subclasses 30+ for a tethered aircraft that may include a reeling device.
- 451, Abrading, subclass 183 for a reeling apparatus used to draw a workpiece to a specified associated abrading station.
- 462, Books, Strip, and Leaves for Manifolding, for strip material joining or separating that may be combined with winding, unwinding, tensioning, or guiding.
- 464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, subclasses 160+ for a slip coupling in general use, and numerous subclasses directed to a rotary shaft, support, and connection of general use that may be analogous to a winding spindle.
- 473, Games Using Tangible Projectile, subclasses 139+ for a reeling device used in combination with a tethered golf ball, subclasses 423+ for a practice or training device involving a tethered projectile which may include a reeling device, and subclasses 575+ for a tethered projectile which may include a reeling device.
- 474, Endless Belt Power Transmission Systems or Components, subclasses 47+ for a pulley having expansible rim means or pulleys having alternately useable, nestable rims; subclasses 101+ for means for adjusting belt tension or for shifting belt, pulley, or guide roll; subclass 140 for a belt guide having a surface in sliding contact with belt; or subclasses 166+ for a friction drive pulley or guide roll.
- 492, Roll or Roller, particularly subclass 4, 5, 21, and 22+ for a roll or roller guide of general use.
- 493, Manufacturing Container or Tube From Paper; or Other Manufacturing From a Sheet or Web, particularly subclasses 297+, 299+, and 303+ for winding or wrapping of a specified sheet or web to manufacture a container or tube.
- 700, Data Processing: Generic Control Systems or Specific Applications, particularly subclass 126 and subclasses 213-244 for article handling and distribution that may include winding.

SUBCLASSES

- 118** Miscellaneous bobbins, cop tubes, or other cores upon which silk, thread, cord, twine, wire, or other cordage may be wound.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 159+, for a wound strand package including a core.

SEE OR SEARCH CLASS:

- 68, Textiles: Fluid Treating Apparatus, particularly subclass 189 and 198 for wound package holders permitting axial fluid access.
- 206, Special Receptacle or Package, subclasses 389+.
- 335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclasses 220+, appropriate subclasses, among these include spools usually of magnetic material to support coils for electromagnets of the lifting, traction and related types.
- 336, Inductor Devices, subclass 185 and 208 for coil supports for plural coil and single coil windings respectively, for inductive devices. In addition, appropriate subclasses of Class 336 include supports of magnetic material for inductive devices.
- 338, Electrical Resistors, subclass 321 for resistance element cores and frames.
- 400, Typewriting Machines, subclass 583.4 for typewriter ribbon spools.
- 492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the notes thereunder.

- 118.1** This subclass is indented under subclass 118. Cop-tubes in which the periphery of the tube is perforated or is otherwise provided with substantial open areas in the tube circumference along its length.

SEE OR SEARCH CLASS:

- 8, Bleaching and Dyeing: Fluid Treatment and Chemical Modification of Textiles and Fibers, subclass 117 for other perforated tubes.
- 68, Textiles: Fluid Treating Apparatus, subclass 198 for other perforated tubes.

- 118.11** This subclass is indented under subclass 118.1. Devices in which the periphery is also yieldable whereby the tube may be circumferentially compressed.

- 118.2** This subclass is indented under subclass 118. Cop-tubes in which the periphery of the tube is yieldable whereby the tube may be circumferentially compressed.

- 118.3** This subclass is indented under subclass 118. Winding cores including a tubular stem, shell or the like, adapted to be supported on a spindle or other holder and on which cops or masses of thread are wound.

- (1) Note. Included in this and indented subclasses are stems having no flanges and stems having one flange.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

118.4+, for tubes having two flanges.

- 118.31** This subclass is indented under subclass 118.3. Winding cores including means to strengthen the tube structurally.

- 118.32** This subclass is indented under subclass 118.3. Winding cores including claimed recitation of the material or substance of which the core or head is manufactured.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

118.7, for material of which two-headed spools are made.

- 118.4** This subclass is indented under subclass 118. Winding cores including two flanges or rims, one such flange at each end of the tube.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

118.3+, for single-headed tubes.

- 118.41** This subclass is indented under subclass 118.4. Winding cores including at least two flanged spools secured together flange-to-flange or end-to-end for common rotation about the axis of the joined spool.

- 118.5** This subclass is indented under subclass 118.4. Devices which are in the form of warp beams having heads or flanges, one at each end of said beam, and including means to adjustably position at least one of said flanges longitudinally along the beam.

- 118.6** This subclass is indented under subclass 118.4. Devices in which the heads or flanges are secured to the tube.

- (1) Note. Included herein are devices in which the securing means include threaded bolts.
- 118.61** This subclass is indented under subclass 118.6. Devices in which each flange includes at least one axial projection having a diameter equal to or less than the internal diameter of the tube, wherein the flange projection is thrust into the end of the tube.
- (1) Note. The axial projection may be integral with or secured to the flange.
- 118.62** This subclass is indented under subclass 118.61. Devices in which the flange projection and the end of the cop-tube are provided with complementary screw threads.
- 118.7** This subclass is indented under subclass 118.4. Devices including claimed recitation of the material or substance of which the core or heads is manufactured.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
118.32, for material of which cop-tubes are made.
- 118.8** Devices under 118.7 in which the core and/or heads are manufactured using thin or sheet-like material.
- 125** Bobbins or spools provided with devices for holding or securing the end of the thread or for guiding it during unwinding and not otherwise classifiable.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
579+, for devices adapted to hold the inner ends of webs to winding cores, drums, or reels.
- SEE OR SEARCH CLASS:
206, Special Receptacle or Package, subclasses 389+.
225, Severing by Tearing or Breaking, subclasses 63+ for spools having a thread cutter attachment which also acts to clamp the thread.
- 125.1** This subclass is indented under subclass 125. Devices including means to fasten the end of a strand to the spool.
- 125.2** This subclass is indented under subclass 125.1. Devices in which the end fastened is the outer end of the wound strand.
- 125.3** This subclass is indented under subclass 125.2. Devices which are attached to a spool and include a guide to permit unwinding of the strand.
- 127** Devices for holding skeins. Usually a plurality of rolls or bobbins or equivalent devices that hold the skein in longitudinally extended or skein form.
- SEE OR SEARCH CLASS:
206, Special Receptacle or Package, subclass 388 for a nonspooled filamentary package.
- 128** Devices having revoluble guides or fliers rotated by pulling on the thread, cord, rope, etc., thereby unwinding it from the spool, bobbin, or reel, which is usually stationary or non-revoluble.
- 129** Devices or forms other than reels, bobbins, spool structures, or twine-holders for holding a coil upon which the material may be wound or from which it may be unwound.
- 129.1** This subclass is indented under the class definition. Devices which retract a free end of a strand or web, so as to present the free end in position for use.
- 129.2** This subclass is indented under subclass 129.1. Devices in which the strand or web is guided for retraction of its free end by an element, which element is connected to a swingable arm.
- 129.3** This subclass is indented under subclass 129.1. Devices in which the strand or web is unwound from a spool or reel rotating in an unwinding direction, and including means to reverse the direction of rotation of the spool or reel.
- (1) Note. Included herein are devices in which the strand or web material is

wound around a roller auxiliary to the supply spool, which roller is located intermediate the supply spool and the free end of said material and rotates in one direction as said material is taken from the supply spool, and including means for reversing the direction of said roller.

129.4 This subclass is indented under subclass 129.1. Devices in which the strand or web is threaded through a guide means, and including a weight connected to move said guide.

129.5 This subclass is indented under the class definition. Devices for supporting or holding a strand package of any type.

129.51 This subclass is indented under subclass 129.5. Devices in which a spool is supported at its ends by axially aligned, opposite stub shafts separated from each other and connected to arms secured to a base.

(1) Note. Included herein are devices in which the stub shafts are connected to a rod which rod extends through the spool.

129.53 This subclass is indented under subclass 129.51. Devices which include a guide means for the strand.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
125, 129.62 and 129.72, for other strand guides.

129.6 This subclass is indented under subclass 129.5. Devices in which a spool is rotatable on or with a shaft, which shaft is secured or journaled at both ends in a base.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
129.7, for other spindles with flanges thereon.

129.62 This subclass is indented under subclass 129.6. Devices which include a guide means for the strand.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

125, 129.53 and 129.72, for other strand guides.

129.7 This subclass is indented under subclass 129.5. Devices in which a bobbin is supported on a spindle-shaft, and including means connected to the shaft for holding the bobbin against shifting axially of the shaft.

(1) Note. Included herein are devices which are mounted on a shaft but are movable relatively to said shaft.

129.71 This subclass is indented under subclass 129.7. Devices in which a spool is supported on a spindle shaft, which shaft is deformed or otherwise inherently capable of inhibiting axial shift of said spool along said shaft.

129.72 This subclass is indented under subclass 129.7. Devices which include strand guiding means.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

125, 129.53 and 129.62, for other strand guides.

129.8 This subclass is indented under subclass 129.5. Devices including means for retarding rotation of a spool or means acting on a strand retarding lengthwise movement of a strand.

130 Miscellaneous devices for holding bobbins and spools, usually elements of or attachments for machines, but excluding those particularly adapted to sewing-machines.

SEE OR SEARCH CLASS:

112, Sewing, subclass 231 and 232 for shuttle-bobbin holders.

130.1 This subclass is indented under subclass 130. Devices in which a bobbin is formed as the frustum of a cone and said bobbin is connected to a shaft by connecting means carried by said shaft complementary to the conical shape of said bobbin.

130.2 This subclass is indented under subclass 130. Devices in which a bobbin is supported by means located above the bobbin, and including

- a vertical axle fixed to a portion of a machine in which the bobbin is used, a bobbin holder depending from, concentric with and rotatable on said axle, and means on said bobbin holder securing said bobbin to said holder.
- 130.3** This subclass is indented under subclass 130. Devices including a support with a plurality of spaced, parallel projections affixed to said support, said projections serving as stationary storage spindles for a plurality of bobbins.
- 130.4** This subclass is indented under subclass 130. Devices including a bobbin spindle which is long axially and thin radially.
- 131** Devices for holding a plurality of bobbin structures in suitable arrangement or position to enable the threads to be drawn off without interference.
- 131.1** This subclass is indented under subclass 131. Devices for holding a plurality of bobbins in a manner particularly adapted for unwinding strand material from a bobbin to a warp beam.
- 132** Holders for bobbins forming troughs, cradles, or similar receptacles affording a protection to the bobbin and thread.
- SEE OR SEARCH CLASS:
 112, Sewing, subclass 231 and 232 for spool and bobbin holders specific to sewing-machines.
 139, Textiles: Weaving, subclass 198.
- 134** Devices not otherwise classifiable for holding bobbins or spools and adapted for general use, particularly domestic, or in connection with apparel apparatus and excluding such as are more particularly adapted for use with machines for making textiles or for spinning.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
 130, for bobbin-holders specially adapted for use in textile machines.
- SEE OR SEARCH CLASS:
 223, Apparel Apparatus, subclasses 106 through 109 for spool-holders combined with other sewing-implement holders.
- 136** Spool-holders provided with clamps, hooks, pins, or other devices by which they may be attached to the person or other support.
- SEE OR SEARCH CLASS:
 223, Apparel Apparatus, subclasses 106 through 109 for holders for a plurality of sewing implements provided with carrier attachments.
- 137** Spool-holders comprising a box or other form of receptacle specially adapted to receive spools to permit unwinding the thread.
- SEE OR SEARCH CLASS:
 223, Apparel Apparatus, subclasses 106 through 109 .
 312, Supports: Cabinet Structure, subclasses 45+ and 72+.
- 137.1** This subclass is indented under subclass 137. Devices in which a spool of strand material is enclosed in a case, including a perforation in said case through which the strand material is led for unwinding of the strand.
- 138** Receptacles for holding a single spool.
- SEE OR SEARCH CLASS:
 112, Sewing, subclass 231 and 232.
 206, Special Receptacle or Package, subclass 63.3 for antiseptic ligatures and subclasses 389+ for a receptacle for wound material or a package of wound material.
- 139** Spool-holders comprising a base, pedestal, or equivalent provided with pins, spindles, or other devices for supporting spools.
- SEE OR SEARCH CLASS:
 223, Apparel Apparatus, subclasses 106 through 109 for spool and implement stands.
- 140** Devices with or without thread guides, such as caps or disks, for preventing the thread from running above or below the heads or ends of the spool, thereby avoiding the winding of the thread around the spool spindle or its entanglement therewith. Includes guides particularly adapted to spool or twine holders.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
157, for guides, per se.
- 141** Miscellaneous devices not otherwise classifiable for holding a ball or mass of twine or cordage material to facilitate unwinding, prevent snarling, and present the twine end in position for handling.
- SEE OR SEARCH CLASS:
211, Supports: Racks, subclasses 50+ and 59.1.
312, Supports: Cabinet Structure, subclasses 50+.
- 146** Twine-holders comprising a casing, box, cage, or other type of receptacle to confine the twine ball or within which the ball is rotatably or loosely mounted or held.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
137+, for receptacle-mounted spool holders.
- 147** Miscellaneous tension devices for winding apparatus not otherwise classifiable and miscellaneous tension devices of general application to cordage material.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
128,
- SEE OR SEARCH CLASS:
56, Harvesters, subclass 450.
57, Textiles: Spinning, Twisting, and Twining, subclasses 106+.
66, Textiles: Knitting, subclass 146.
87, Textiles: Braiding, Netting, and Lace Making, subclasses 56+ and 61.
111, Planting, subclass 49.
112, Sewing, subclass 254.
139, Textiles: Weaving, subclasses 212+.
226, Advancing Material of Indeterminate Length, subclass 195 for devices for placing tension on material of indeterminate length.
318, Electricity: Motive Power Systems, subclasses 6+ for electrical motive power systems which are effective to control the tension on running material solely by appropriate control of an electric motor.
- 474, Endless Belt Power Transmission Systems or Components, particularly subclasses 101+ for a tension adjuster used in an endless belt power transmission.
- 148** Alarm or indicator mechanism combined with or specially adapted for use with tension devices.
- SEE OR SEARCH CLASS:
340, Communications: Electrical, subclass 668 for electrical automatic tension responsive indicating systems.
- 149** Tension devices in which a member thereof is held in frictional engagement with the cordage material employed, as thread, to regulate the tension of the same. Generally two cooperating members are provided, between which the material to be tensioned is passed.
- 150** Tension clamps comprising a pair of rotary disks between which the material passes.
- 151** Includes friction-clamps in which one or both clamp members are provided with a rotary roller to engage and tension the material.
- 152** Roller clamps having a roller provided with surface corrugations or flutes parallel with the axis of the roller. These flutes may form teeth to cooperate with those of a similarly formed roller, thus providing a tortuous course for the material.
- 152.1** This subclass is indented under subclass 149. Devices in which a ball clamps the strand against a socket.
- 153** Tension devices in which the material is forced to move over a deflected path, the extent of which produces the tension.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
152, for fluted roller tension clamps producing a tortuous course.
155, for wheel tensions producing a tortuous course.

154 Tortuous-course tension devices in which the path of the material may be varied to change or adjust the tension.

155 Tension devices in which a rotary pulley, wheel, or disk is employed and around which the cordage or other material is passed. The contact face or groove of the wheel may be provided with means for producing a sinuous or deflected path for the material.

SEE OR SEARCH CLASS:

- 474, Endless Belt Power Transmission Systems or Components, particularly subclasses 101+ for tension adjusters for an endless power transmission belt wherein the tension adjusters may comprise an idler pulley or guide roll.
- 492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the notes thereunder.

156 Tension devices comprising friction brakes, shoes, springs, or adjustable bearing devices for regulating the rotation of the reel or bobbin, etc.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 132, for tension-brake devices in combination with bobbin supporters.

SEE OR SEARCH CLASS:

- 56, Harvesters, subclass 450.
- 87, Textiles: Braiding, Netting, and Lace Making, subclass 61.
- 160, Flexible or Portable Closure, Partition, or Panel, subclasses 291+ for brakes and stops applied to rollers for flexible and portable panels, particularly subclasses 298+ for friction type.
- 188, Brakes, subclasses 68 through 85.
- 192, Clutches and Power-Stop Control, subclasses 15+.

156.1 This subclass is indented under subclass 156. Devices in which the brake is applied to the periphery of the material.

156.2 This subclass is indented under subclass 156. Devices which include braking means responsive to speed, tension, package size, etc., and applied to a disc other than the spool.

157 Devices not otherwise classifiable for directing the material to be wound to the reel drum or bobbin or miscellaneous guides for winding machines, excepting guides and guards for fabrics or webs and spool-holders.

(.5) Note. Where the device or guide is claimed with no significant guide structure but merely in terms of the composition or material of which it is composed, it will be classified in the appropriate composition or material class even though there is no claim to the composition, per se. In this connection the following classes should be considered: (a) Class 75, Specialized Metallurgical Processes, Compositions for use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, for articles defined solely by their metal or alloy composition; (b) Class 106, Compositions: Coating or Plastic. Note particularly the class definition for the type of composition within the scope of Class 106 and for compositions elsewhere classified; (c) Class 428, Stock Material or Miscellaneous Articles, subclasses 544+ for stock materials, e.g., of indefinite length, which are all metal or have adjacent metal components; and (d) Class 520, Synthetic Resins or Natural Rubbers, appropriate subclasses for synthetic resins or natural rubber and compositions thereof.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 140, for guides employed with spool-holders.
- 615+, for material guards and guides.

SEE OR SEARCH CLASS:

- 16, Miscellaneous Hardware, subclasses 2.1+ for fixed guides in the nature of a bell mouth opening.
- 28, Textiles: Manufacturing, subclasses 232+ for stripping guides used to clear running lengths of thread.
- 57, Textiles: Spinning, Twisting, and Twining, subclasses 106+ for yarn and thread guides, protectors, or separators.

- 112, Sewing, subclasses 136+ for a work manipulating guide combined with a specified sewing process or apparatus, or subclass 302 for a thread guiding or handling means combined with a specified sewing process or apparatus.
- 226, Advancing Material of Indeterminate Length, may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel driving or reel stopping means, etc.), subclass 196.1 for a passive guide combined with a material feeder.
- 520, Synthetic Resins or Natural Rubbers, appropriate subclasses for synthetic resins and compositions thereof.
- 157.1** This subclass is indented under subclass 157. Devices in which the directing means is movable along the axis of a rotatable reel drum, and said directing means is free from connection to or responsiveness to drum rotating means.
- 159 WOUND STORAGE PACKAGE:**
This subclass is indented under the class definition. Product comprising a length of elongated material (e.g., strand, twine, web, tape, or wire) arranged in convolutions around a common center or axis for subsequent unwinding.
- (1) Note. This and the indented subclasses provide for a storage coil made by winding with nominal cutting or application of a wetting agent or similar material to hold the material in place on the package to facilitate orderly unwinding; however, a wound article or article component such as a filter, sport ball, ball core, or electrical device is found in a class specifically provided for such articles.
- SEE OR SEARCH CLASS:
206, Special Receptacle or Package, subclasses 389+ for a package for a roll or reel.
- 160.1 Convolute coil (e.g., wound web):**
This subclass is indented under subclass 159. Subject matter wherein elongated material is wound one convolution substantially radially upon the next preceding convolution.
- SEE OR SEARCH CLASS:
4, Baths, Closets, Sinks, and Spittoons, subclass 244.2 for coiled rolled toilet seat covers.
- 160.2 Plural coils:**
This subclass is indented under subclass 160.1. Subject matter wherein the elongated material is wound to form multiple distinct convolution groups.
- 160.3 Axial retainer (e.g., flange):**
This subclass is indented under subclass 160.1. Subject matter wherein the elongated material is wound onto a spool having a winding surface and a material containment formation radially projecting beyond the winding surface.
- 160.4 For particular coiled material:**
This subclass is indented under subclass 160.1. Subject matter wherein special significance is attributed to a physical or chemical characteristic of the elongated material in determining the construction of the package (e.g., protection or arrangement of sensitive, irregular, or difficult-to-coil material).
- 163 Interconvolutionary strand delivery:**
This subclass is indented under subclass 159. Package in which the inner end portion of the strand extends between convolutions of the winding to the outside of the winding, or which includes an opening between convolutions for passage of the strand inner end portion.
- 164 Strand end feature:**
This subclass is indented under subclass 159. Package in which a terminal portion of the strand comprises a separate and distinct minor winding; or has an additional element applied to it; or is so disposed in other than its normal adjacency to other convolutions in the main winding as to make it readily available and/or usable for a specified purpose.
- 165 Strand end forms winding:**
This subclass is indented under subclass 164. Package wherein the terminal portion comprises a minor group of convolutions distinguishable, as a body, from the main winding.

SEE OR SEARCH THIS CLASS, SUBCLASS:

167, for windings connected in tandem, but none of which is a mere terminal portion of any other.

475.7+, for a helical winding device having means to position the end of a material in a particular manner on a wound material package.

166 Plural windings:

This subclass is indented under subclass 159. Package comprising (a) at least two distinct strands, or (b) a single strand formed into a plurality of separate bulk windings connected by an intermediate portion of the strand.

167 Serially connected:

This subclass is indented under subclass 166. Package which includes the construction described in (b) in the definition of subclass 166 above, and the tail end of one winding is connected to the lead end of another.

SEE OR SEARCH THIS CLASS, SUBCLASS:

165, for plural windings one of which comprises a mere terminal portion of the strand of another and is of minor nature.

168 Distorted winding:

This subclass is indented under subclass 159. Product having a wound strand arrangement deformed as a mass, as by compacting or stretching, after its convolutions have been laid to form the initial package.

169 Spooled:

This subclass is indented under subclass 168. Product in which the original package comprises a strand arrangement laid on an axial core, and having an applied pair of heads abutted and pressed axially against its ends.

170 Housing or outer peripheral support:

This subclass is indented under subclass 159. Package enclosed within a receptacle, or having its winding engaged at its outside edge portion by holding means.

(1) Note. Where the receptacle or holding means comprises a container, wrapper or

cover which must be destroyed or mutilated to use the package, see the Search Class note above under subclass 159.

171 With strand guide:

This subclass is indented under subclass 170. Product including structure (other than the wound material itself) for keeping the strand in a desired path during unwinding thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

125, for a bobbin or spool having a strand guide.

128, for apparatus with a wound strand package support and revoluble strand guide.

163, for a housed strand package with strand guide by means of which the strand is delivered through the mass.

172 Strand restraining or snarl preventing means:

This subclass is indented under subclass 159. Package provided with an element or portion (as distinguished from the mere disposition of the filamentary material) for preventing or controlling slipping, dropping or loosening of convolutions during operational unwinding.

173 Adhesive:

This subclass is indented under subclass 172. Package in which the said element or portion is an agglutinant.

(1) Note. Autogenous adhesion is included.

174 Particular winding:

This subclass is indented under subclass 159. Package in which the wound strand mass has its convolutions laid in a particularly specified arrangement as claimed.

(1) Note. Patents directed to specifically designated known windings, such as "helical-cross-, universal-wound", etc., are found in this subclass if no feature peculiar to one of the superior subclasses in this schedule is claimed.

175 Cone wind:

This subclass is indented under subclass 174. Package in which the strand is laid in conical layers progressing from one end of the wound mass to its other end.

176 On core:

This subclass is indented under subclass 174. Package which includes an axial support upon which the winding is laid.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 175, for a cone wound package including a core.
- 470+, for a helical winding device including a device for winding material onto a core.

SEE OR SEARCH CLASS:

- 139, Textiles: Weaving, subclasses 206+ for an axially supported wound thread carried in a loom shuttle.

177 Plain cone core:

This subclass is indented under subclass 176. Package wherein the support is unheaded and the winding carrying portion of its surface is a uniformly tapered cone or frustum thereof.

178 Plain cylinder:

This subclass is indented under subclass 176. Package wherein the support is unheaded and the winding carrying portion of its surface is a circular cylinder.

222 CARD, BOARD, OR FORM:

A generally flat panel or framelike member, per se, upon which web, bank or strand material may be wound.

SEE OR SEARCH CLASS:

- 206, Special Receptacle or Package, subclasses 389+ for a roll or reel package and see notes thereunder.

223 Fishing rod reel:

This subclass is indented under subclass 370. Subject matter comprising a portable reel adapted for use with a fishing rod and generally including a frame and drive device for causing a line to be wound by a line take-up member in the form of (a) a rotated spool, or (b) a line

guide rotated about a normally nonrotated spool; fishing reel components not provided for elsewhere, or attachments designed for direct association with a fishing reel.

- (1) Note. The frame may include a mounting bracket releasably connectable to a fishing rod, or it may be an integral part of a nominally recited fishing rod.
- (2) Note. To avoid diffusion of the art, a reel used on a fishing rod, but whose drive mechanism is replaced by hand wrapping are also classified in this and the indented subclasses.
- (3) Note. This subclass is the locus for a specific fishing reel in combination with a measuring and calculating or indicating device.

SEE OR SEARCH CLASS:

- 33, Geometrical Instruments, subclass 720 and 734+ for specific measuring device in a reel.
- 702, Data Processing: Measuring, Calibrating, or Treating, subclasses 158+ for linear distance or length measurement system.

224 Axial unwinding (i.e., spinning reel):

This subclass is indented under subclass 223. Subject matter in which the line unwinds by spinning over a discharge end of a stationary spool.

- (1) Note. Included in this and the indented subclasses are line winding and distributing mechanisms and brakes specifically designed for spinning reels. However, drive mechanisms including clutches, yieldable couplings and handles; frames, frame components and, unwinding limiters, etc., which are recited as subcombinations of nominally recited spinning reels are classified as subcombinations, per se, in subclasses 249+.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 249, for a drive mechanism, per se
- 305, for an unwinding indicator
- 309, for an unwinding limiter

- 311, for a frame or frame component
 322, for a spool or spool shaft feature, per se.
- 225 Motor driven:**
 This subclass is indented under subclass 224. Subject matter in which the drive device of the reel includes a device for converting potential energy into kinetic energy, i.e., a motor, to cause the line to be wound.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 250, for a motor driven, tangentially unwinding fishing reel.
- SEE OR SEARCH CLASS:
 43, Fishing, Trapping, and Vermin Destroying, subclass 21 for a motor driven fishing reel incorporated in a specified fishing rod.
- 226 Spring motor:**
 This subclass is indented under subclass 225. Subject matter wherein the motor is powered by energy stored in a resilient member, i.e., a spring.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 251, for a spring motor driven, tangentially unwinding fishing reel.
- SEE OR SEARCH CLASS:
 185, Motors: Spring, Weight, or Animal Powered, subclasses 37+ for a spring motor.
 267, Spring Devices, subclasses 166+ for details of a spring device, per se.
- 227 Spool rotatable to wind:**
 This subclass is indented under subclass 224. Subject matter in which the spool is rotated to take up the line.
- 228 With guide shiftable between wind and unwind positions:**
 This subclass is indented under subclass 227. Subject matter including a line guide mounted for movement between (a) a winding position where the line is disposed in a path for tangential winding, and (b) an unwinding position where the line is disposed in a path for discharge over an end of the spool.
- 229 Spool pivotal between wind and unwind positions:**
 This subclass is indented under subclass 227. Subject matter having a support mounting the spool for arcuate movement of substantially 90° between (a) a tangential winding position, and (b) an axially unwinding position in which the line is discharged over an end the spool.
- 230 With winding guide on rotor rearward of spool:**
 This subclass is indented under subclass 224. Subject matter including a rotatably driven winding member, i.e., rotor, located at the end of the spool opposite the line discharge end and having a guide engageable with the line to wrap the line onto the spool.
- 231 Guide shiftable on rotor:**
 This subclass is indented under subclass 230. Subject matter including a guide mounted on the rotor for movement between a position in engagement with the line for wrapping it onto the spool and a position free of the line to permit the line to spin over the end of the spool.
- 232 Guide shifted to wind position by rotor drive:**
 This subclass is indented under subclass 231. Subject matter including an actuator for causing the guide to move from an unwinding position to a winding position in response to rotation of the rotor by the drive device.
- 233 Guide shifted to unwind position by discrete manual operator:**
 This subclass is indented under subclass 232. Subject matter having hand manipulated means connected to the guide for swinging the guide from winding to unwinding position.
- (1) Note. The manual operator may be a separate mechanism connected by linkage to the guide or a distinct appendage connected directly to the guide for finger manipulation.
- 234 With winding guide on rotor forward of spool:**
 This subclass is indented under subclass 224. Subject matter having a rotatably driven winding member, i.e., rotor, located at the line discharge end of the spool and carrying a guide

- engageable with the line to wrap the line onto the spool.
- 235 Rotor drive shifts guide to unwind and wind positions:**
This subclass is indented under subclass 234. Subject matter in which the drive device includes linkage for shifting the guide or a part thereof between a line engaged position for winding the line and a disengaged position freeing the line for unwinding.
- 236 With manual actuator to shift guide to unwind position:**
This subclass is indented under subclass 234. Subject matter having a manually actuated button or lever, i.e., actuator, for moving the line guide to a position freeing the line for unwinding.
- 237 Actuator forward of rotor:**
This subclass is indented under subclass 236. Subject matter wherein the actuated means or a significant portion thereof is located at the line discharge end of both the spool and rotor and is manipulated from the line discharge end of the reel.
- 238 With line snubber shifted by remote actuator:**
This subclass is indented under subclass 236. Subject matter wherein the manual actuator, in addition to shifting the guide, also moves a line engaging brake i.e., snubber, to force the line toward a frame component to control unwinding of the line.
- 239 Rotor and snubber shiftable axially:**
This subclass is indented under subclass 238. Subject matter wherein the manual actuator shifts both the rotor and line snubber axially along the axis of winding.
- 240 Guide shifted radially:**
This subclass is indented under subclass 239. Subject matter wherein axial movement of the rotor and line snubber occurs simultaneously with movement of the line guide radially inward to the unwinding position.
- 241 With level-winding mechanism:**
This subclass is indented under subclass 224. Subject matter having structure for systematically distributing the line along the length of the spool.
- (1) Note. This subclass receives patents which distributing the line by shifting the guide or rotor, or by shifting the spool by means other than by an eccentric cam.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
273, for a level winding device in other fishing reels.
476.7+, for a device for distributing elongated material on the take-up of a helical winding apparatus.
- 242 Eccentric cam reciprocates spool:**
This subclass is indented under subclass 241. Subject matter wherein the line distributing mechanism includes a rotatable member with a surface eccentric to the axis of rotation for imparting reversible, substantially linear motion to the spool for evenly distributing line being wound.
- 243 With brake:**
This subclass is indented under subclass 224. Subject matter having a device for retarding or selectively preventing rotation of a reel part, e.g., the spool.
- (1) Note. Excluded from this and the indented subclasses are devices that serve as torque transmitting couplings (clutches) when power flows in one direction and as brakes when the power is reversed, even though such devices may be called a brake.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
156, for a brake in other winding devices.
285, for brakes in other fishing reels.
396+, for brakes in a general purpose reel.
- SEE OR SEARCH CLASS:
188, Brakes, particularly subclasses 71.1+, 74+, and 83 for a brake in general use.

244 Continuously applied:

This subclass is indented under subclass 243. Subject matter wherein the brake is continuously applied to prevent spool rotation below a predetermined torque on the spool.

- (1) Note. This is the locus for friction brakes applied directly between the spool and frame.

245 Between spool shaft and frame:

This subclass is indented under subclass 244. Subject matter in which the brake is continuously applied between a rotatable spindle supporting the spool and the frame.

246 Between spool and spool shaft:

This subclass is indented under subclass 244. Subject matter wherein the brake is applied between the spool and a nonrotatable spindle on which the spool is carried.

247 Positive:

This subclass is indented under subclass 243. Subject matter wherein the brake prevents rotation of the reel part in at least one direction.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 297, for positive brakes in other types of fishing reels.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, subclasses 575 through 578 for a ratchet device.
188, Brakes, subclasses 82.1 through 82.9 for a general purpose, positive brake.

248 Defines home position of reel part:

This subclass is indented under subclass 247. Subject matter wherein a one-way brake device stops the winding mechanism at a predetermined rotary position.

249 With drive mechanism:

This subclass is indented under subclass 223. Subject matter wherein the drive device includes a force input means, e.g., crank, motor, or externally driven shaft, and connecting means to apply or regulate the transfer of force, i.e., torque, to the take-up member.

- (1) Note. This subclass is the locus for drive mechanisms employing shock absorbers, and spool drive mechanism providing irregular line take-up rates.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 317, for a reel whose drive device is an element, e.g., a knob, fixed directly to the spool or a sleeve of the spool.

250 Motor driven:

This subclass is indented under subclass 249. Subject matter wherein at least one input of the drive mechanism includes a device for converting potential energy into kinetic energy, i.e., a motor.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 225, for a motor driven spinning reel.

SEE OR SEARCH CLASS:

- 43, Fishing, Trapping, and Vermin Destroying, subclass 21 for a motor driven fishing reel incorporated in a specified fishing rod.
254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 360 through 362 for a haulage device employing a particular motor.

251 Spring motor:

This subclass is indented under subclass 250. Subject matter wherein the motor is powered by energy stored in a resilient element.

- (1) Note. Springs used in fishing reels for purposes other than winding, e.g., as shock absorbers, are classified in subclasses 223, 249 or elsewhere depending on other specific subcombinations.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 226, and 371+, for a spring motor used in a spinning reel and a nonfishing reel, respectively.

SEE OR SEARCH CLASS:

- 185, Motors: Spring, Weight, or Animal Powered, subclasses 37+ for a spring motor.

- 267, Spring Devices, subclasses 166+ for details of a spring device, per se.
- 252 Motor actuated in response to pull on line:**
This subclass is indented under subclass 251. Subject matter having a latch that releases the energy stored in the spring in response to a tension on the fishing line.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
385.1+, for a releasable lock acting against the bias of a spring motor in a nonfishing reel.
- SEE OR SEARCH CLASS:
43, Fishing, Trapping, and Vermin Destroying, subclass 15 and 16 for an automatic hooking device.
- 253 With independent manual drive:**
This subclass is indented under subclass 251. Subject matter having selectively useable spring motor and manually operated crank to drive the same take-up member.
- 254 With spring charger:**
This subclass is indented under subclass 251. Subject matter having a selectively operable device to store energy in the spring motor independent of spool rotation.
- 255 Multiple drive ratio:**
This subclass is indented under subclass 249. Subject matter wherein the drive mechanism includes structure for selectively varying the speed ratio between the force input means and the take-up member.
- (1) Note. Reels having different speed ratios resulting from diverse drive sources, e.g., a hand crank and electric motor, are classified on the basis of the drive sources.
- 256 Ratchet-type drive:**
This subclass is indented under subclass 249. Subject matter wherein the drive mechanism includes an oscillated or reciprocated mechanical input, e.g., a lever, pull cord, etc., acting through a unidirectional device, e.g., a pawl and ratchet, to cause winding.
- SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, subclasses 25+ and 812 for details of a related mechanical movement.
- 254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 217+ and 352+ for a haulage drum driven by a ratchet wheel and driving pawl.
- 257 With disengageable positive drive components (e.g., a clutch):**
This subclass is indented under subclass 249. Subject matter wherein the drive mechanism includes a drive element shiftable from a position for positively transferring torque between the force input and the line take-up member, to a second position completely interrupting the positive torque transfer.
- (1) Note. This subclass is the locus for reels having nongear, positive drive couplings shiftable relative to an axis of rotation in a radial or oblique direction.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
250, 253 and 255, for a fishing reel having shiftable, positive drive components for altering the power path or drive ratio.
- SEE OR SEARCH CLASS:
192, Clutches and Power-Stop Control, for a shiftable clutch and operator in diverse technologies.
- 258 With alternative yieldable mechanism:**
This subclass is indented under subclass 257. Subject matter having a friction device, e.g., coupling or brake, associated with the shiftable drive element to provide a selectively either (a) positive driving rotation, or (b) frictional driving or braking.
- SEE OR SEARCH CLASS:
192, Clutches and Power-Stop Control, subclasses 12+ for a clutch and brake combination in various devices.

- 254, Implements or Apparatus for Applying Pushing or Pulling Force, subclass 347 and 366 for a haulage reel employed in a clutch linked to a friction brake.
- 259 Axially engaged:**
This subclass is indented under subclass 257. Subject matter wherein the shiftable drive element moves in a direction along or parallel to an axis of rotation of the drive element.
- 260 Coaxial of spool:**
This subclass is indented under subclass 259. Subject matter wherein the drive element and line take-up member are disposed on the same axis of rotation.
- 261 Reengageable responsive to drive rotation:**
This subclass is indented under subclass 260. Subject matter wherein the drive element is shifted from the torque interrupting position to positive torque transfer position in response to operation of the force input means.
- 262 Reengageable responsive to drive rotation:**
This subclass is indented under subclass 257. Subject matter wherein the drive element is radially shifted from the torque interrupting position to the torque transfer position in response to movement of the force input means.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
259, and 261, for an axially applied drive component shifted in response to drive rotation.
- 263 Gear pair:**
This subclass is indented under subclass 257. Subject matter wherein the drive mechanism includes a pair of engageable torque transmitting element, at least one of which is the drive element shiftable in a radial direction to interrupt the positive torque transfer.
- SEE OR SEARCH CLASS:
254, Implements or Apparatus for Applying Pushing or Pulling Force, subclass 298 and 345 for a haulage reel having gears shiftable into and out of intermeshing engagement.
- 264 With yieldable drive coupling (e.g., friction or fluid clutch):**
This subclass is indented under subclass 249. Subject matter wherein the drive mechanism includes a drive element adjustable to provide slippage for limiting the torque which can be transmitted between the power input and line take-up member.
- (1) Note. The drive input of a fishing reel normally rotates a line take-up as an output for winding. Thus, a yieldable coupling serves a clutching function between driving and driven parts. Frequently the flow of power is reversed, resulting in a braking action between the driven element and the now stationary or overpowered input. To avoid diffusion of the art, any fishing reel with a significant yieldable coupling that can transmit power is placed here despite the use of terms such as brake, drag, etc.
- SEE OR SEARCH CLASS:
192, Clutches and Power-Stop Control, subclasses 12+ for a combined clutch and brake.
464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, subclasses 40+ for an overload release drive coupling.
- 265 Variable by crank manipulation:**
This subclass is indented under subclass 264. Subject matter wherein at least one form of the torque limit adjustment is achieved by selectively shifting a crank acting as the force input, e.g., shifting the crank in opposite directions to alternately increase or decrease the adjustment.
- 266 Variable within distinct range(s):**
This subclass is indented under subclass 265. Subject matter wherein the drive element adjustment includes means to limit the adjustment to one or more ranges of torque transfer having predetermined minimum and maximum values.
- 267 Between drive shaft and crank:**
This subclass is indented under subclass 264. Subject matter wherein the adjustable drive element of the drive mechanism acts directly

between a crank-type power input element and a drive spindle supporting the input element.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

269, for a fishing reel whose adjustable coupling acts directly between a crank shaft and line take-up.

268 Between drive shaft and gear:

This subclass is indented under subclass 264. Subject matter wherein the adjustable drive element of the drive mechanism acts directly between a shaft of the drive mechanism and a gear on the shaft at a point spaced from the take-up member.

(1) Note. A reel with an adjustable drive element directly between a shaft and gear that is additionally coaxial of the spool is included here.

269 Coaxial with line take-up:

This subclass is indented under subclass 264. Subject matter wherein the adjustable drive element rotates coaxial of the line take-up member, usually a spool.

270 Axially applied:

This subclass is indented under subclass 269. Subject matter having an actuator for shifting the adjustable drive element axially along the axis of rotation of the line take-up member.

271 By center pin:

This subclass is indented under subclass 270. Subject matter wherein the actuator includes a shaft or pin-like element coaxial with the line take-up and operates to draw the take-up toward the force input to increase the torque transmittable between the input and line take-up.

272 With feed roller:

This subclass is indented under subclass 249. Subject matter wherein the drive mechanism includes at least one roller driven by the force input and cooperating with a pressure element to engage and feed the line to a separate take-up member.

SEE OR SEARCH CLASS:

226, Advancing Material of Indeterminate Length, subclass 168 and 181+ for details of a feeding element.

254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 264+ for a haulage device that may include a line feeder.

273 With level winding:

This subclass is indented under subclass 249. Subject matter having structure for systematically distributing a line along the length of a take-up spool.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

241, and 242, for a spinning-type fishing reel with a level winding mechanism.

476.7+, for a device for distributing elongated material on the take-up of a helical winding apparatus.

274 Line shifts along rotatable cam bar:

This subclass is indented under subclass 273. Subject matter wherein the line distributing device includes a rotatable bar substantially parallel to the axis of the spool and wherein the bar has an undulatory, generally spiral surface that engages the line being wound to distribute the line evenly onto the spool.

275 Line traction guide wheel:

This subclass is indented under subclass 273. Subject matter wherein a line distributing device includes a wheel mounted on a shaft and engaged by the line being wound to cause the wheel to rotate and including structure on the wheel and shaft to convert rotation of the wheel to a back and forth movement substantially parallel to the spool.

276 Manually shifted guide:

This subclass is indented under subclass 273. Subject matter wherein the line distributing device includes a portion specifically contoured for direct engagement by the user for shifting a line guide or shifting a line along the length of the spool to evenly distribute the line.

277 Drive mechanism oscillates guide:

This subclass is indented under subclass 273. Subject matter wherein the line distributing device includes a pivotally mounted line guide and linkage connected to the drive mechanism to shift the guide in opposite directions along a curved path.

278 Drive mechanism reciprocates guide:

This subclass is indented under subclass 273. Subject matter wherein the line distributing device includes a line guide and linkage connected to the drive mechanism to shift the guide in opposite directions along a substantially linear path parallel to the spool.

- (1) Note. The linear path may include proportionately small curves, e.g., an elliptical path with an extremely long major axis and a short minor axis as would the locus of a point traveling with an elongated chain trained over a pair of small sprockets.

279 Reversely threaded screw:

This subclass is indented under subclass 278. Subject matter wherein the drive mechanism linkage includes at least one shaft and right and left hand helical grooves merged together at each end to receive a follower connected to the guide so that rotation of the shaft by the drive mechanism imparts reciprocating motion to the guide.

280 Guide shiftable between wind and unwind positions:

This subclass is indented under subclass 279. Subject matter having means to shift the line guide with respect to the linear path of reciprocation, to reduce or eliminate contact between the guide and line during unwinding.

281 Guide has line removal opening:

This subclass is indented under subclass 279. Subject matter wherein the reciprocated line guide has a passage through which the line is laterally removable.

282 Alternative right or left side drive:

This subclass is indented under subclass 249. Subject matter wherein the drive mechanism includes a mounting device for selectively relocating the force input on the frame.

283 Hand crank feature:

This subclass is indented under subclass 249. Subject matter wherein particular significance is attributed to a drive handle.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclass 545 for a general purpose handle.

284 Collapsible or extensible:

This subclass is indented under subclass 283. Subject matter wherein the hand crank has means to (a) vary its effective length, or (b) reposition the hand crank between operating and storage positions.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclass 546 and 547 for an extensible or collapsible hand crank in general use.

285 With brake:

This subclass is indented under subclass 223. Subject matter having means to retard or selectively prevent line-unwinding rotation of the spool.

- (1) Note. If an element serves a coupling function in at least one mode of use, even though it may serve as a connection between dynamic and static elements in another mode of use, it should normally be placed with yieldable drive couplings in subclass 264.

SEE OR SEARCH THIS CLASS, SUBCLASS:

156, for a brake used in a winding machine.
243, for a brake in a spinning-type fishing reel.
410+, for a brake in a general use reel.

SEE OR SEARCH CLASS:

188, Brakes, for general purpose brake.
254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 375+ for a brake in a haulage device, e.g., winch.

286 Unwinding speed regulator (e.g., anti-backlash brake):

This subclass is indented under subclass 285. Subject matter wherein the brake acts to variably regulate unwinding of line in response to conditions in the line or reel during the casting of a weighted line.

- (1) Note. Due to factors such as spool inertia, an unwinding spool may accelerate too rapidly or continue to rotate in the unwinding direction after the line ceases to be pulled from the spool resulting in loosened turns of line "backlash". Brakes provided for in this and the indented subclasses coordinate spool rotation with the acceleration, deceleration and termination phases of line demand during casting without requiring concurrent user adjustment.

287 Line tension responsive actuator:

This subclass is indented under subclass 286. Subject matter wherein the brake is associated with a line engaging member shiftable in response to changes in the tension of the unwinding line to regulate braking.

288 Magnetic:

This subclass is indented under subclass 286. Subject matter wherein the brake includes (a) a device for producing lines of magnetic flux, and (b) an electrically conductive device disposed to cut the flux lines, one of the devices being stationary and the other rotatable with the spool to establish a braking force opposing rotation of the spool in the unwinding direction.

- (1) Note. The use of a magnetic device solely to regulate the position of a friction brake would be classified elsewhere, e.g., subclasses 301 and 302.

SEE OR SEARCH THIS CLASS, SUBCLASS:

155, for a magnetic line tensioning device.

SEE OR SEARCH CLASS:

188, Brakes, subclass 267 for a similar brake in general use.

310, Electrical Generator or Motor Structure, subclass 93 and 105+ for a hysteresis or eddy current device.

289 Centrifugal:

This subclass is indented under subclass 286. Subject matter wherein the brake includes at least one element having mass rotatable with, but shiftable relative to, the spool when subjected to the centrifugal force of rapid rotation to shift the mass element(s) into a position to retard rotation of the spool.

SEE OR SEARCH CLASS:

182, Fire Escape, Ladder, or Scaffold, subclasses 191+, 234, and 239 for a centrifugal brake retarding unwinding in a fire escape reel.

188, Brakes, subclasses 184 through 186 for a speed regulating brake used in various fields.

290 Spool bearing brake:

This subclass is indented under subclass 285. Subject matter wherein the brake applies a relatively light retarding force to a bearing that supports the spool or to the end of a spool shaft to dampen free rotation of the spool.

- (1) Note. For placement in this subclass, the bearing should be disclosed as having a special retarding element or surface distinct from a typical thrust bearing that might be found in subclass 321.

SEE OR SEARCH CLASS:

188, Brakes, for a general purpose brake adjustment device.

384, Bearings, for a bearing used in various fields.

291 Manual pressure control:

This subclass is indented under subclass 285. Subject matter wherein either (a) the brake includes an actuator disposed for facilitating manual engagement to selectively apply a spool retarding force in direct proportion to the manual force instantaneously exerted, or (b) special access is provided for the user's thumb or finger to directly apply a retarding force to the spool.

292 Radially applied:

This subclass is indented under subclass 291. Subject matter wherein the brake is applied to a rotatable element in a direction substantially perpendicular to the axis of rotation of the rotatable element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

301, for a fishing reel with a radially engaged brake set by a position sustaining adjustment.

293 Rolling contact:

This subclass is indented under subclass 292. Subject matter wherein the retarding force is applied to the spool by a brake having a rotatable shoe engageable with the spool or element rotatable with the spool.

294 Separable attachment:

This subclass is indented under subclass 292. Subject matter wherein the brake is readily attachable and removable without substantial structural modification of a conventional fishing reel.

SEE OR SEARCH THIS CLASS, SUBCLASS:

323, for a nonbraking, fishing reel attachment.

295 Connected to spool by one-way clutch:

This subclass is indented under subclass 285. Subject matter wherein the brake is connected to the spool through an overrunning clutch that acts to drivingly connect the spool to the brake only in the unwinding direction of the spool.

296 Adjustable pressure pawl (e.g., braking clicker):

This subclass is indented under subclass 285. Subject matter wherein the brake is an elongated, pawl-like member, commonly termed a clicker, and a device to adjust the pressure with which the pawl-like member bears against a toothed sprocket or gear.

SEE OR SEARCH THIS CLASS, SUBCLASS:

306, for a clicker that produces braking incidental to providing an audible signal.

297 Positive:

This subclass is indented under subclass 285. Subject matter wherein the brake device is intended, in at least one position, to prevent rotation of the spool or drive mechanism in both the winding and unwinding direction.

(1) Note. In addition to usual locking bars, friction brakes designed for application of retarding force to a degree to preclude rotation of the spool at any anticipated force are placed here.

298 One-way:

This subclass is indented under subclass 297. Subject matter wherein the brake device, in one position, prevents rotation in only one direction.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclasses 575 through 578 for a ratchet device.

188, Brakes, subclasses 82.1 through 82.9 for a general purpose one-way brake.

299 With disabler:

This subclass is indented under subclass 298. Subject matter having an actuator to shift the one-way brake device to a nonoperating position.

SEE OR SEARCH CLASS:

188, Brakes, subclasses 82.3 through 82.34 for a general purpose one-way brake with a disabler.

300 Rotation responsive:

This subclass is indented under subclass 299. Subject matter wherein the actuator shifts the one-way brake device to nonoperating position in response to rotation of the drive mechanism.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclass 576 for a noiseless pawl and ratchet.

188, Brakes, subclass 82.4 for a one-way positive brake with a hold out device.

301 Radially engaged:

This subclass is indented under subclass 285. Subject matter wherein the brake is in a direction radial of the axis of the spool.

302 Axially engaged:

This subclass is indented under subclass 285. Subject matter wherein the brake is applied in a direction parallel to the axis of the spool.

303 Coaxial with spool:

This subclass is indented under subclass 302. Subject matter wherein the brake is applied along an axis of application which is also the axis of rotation of the spool.

304 On adjustable lever:

This subclass is indented under subclass 302. Subject matter wherein the brake is mounted on a lever movable in a direction parallel to the spool axis.

305 With unwinding indicator (e.g., bell or flashing light):

This subclass is indented under subclass 223. Subject matter having means to signal spool rotation or resistance to rotation.

- (1) Note. Devices appropriate for original placement in this and the indented subclasses should themselves produce no more than nominal coupling or braking effect. A patent for a face clutch whose teeth emit a chattering sound upon relative slippage, or an adjustable force pawl providing significant retarding effect would be classified in subclasses 264 and 296, respectively.

SEE OR SEARCH CLASS:

116, Signals and Indicators, appropriate subclasses for details of an indicator or alarm, per se.

306 Clicking indicator (e.g., flexible pawl and toothed member):

This subclass is indented under subclass 305. Subject matter wherein the signal means includes a flexible spring-like member engageable with a serrated member, the members being relatively rotatable with respect to each other to provide an audible signal.

307 Spring biased pawl:

This subclass is indented under subclass 305. Subject matter wherein the signal device includes a toothed member urged by a separate resilient means into engagement with a serrated member, the members being relatively rotatable with respect to each other to provide the audible signal.

308 Plural spring sections:

This subclass is indented under subclass 307. Subject matter wherein the resilient means comprise either separate elements or a single element with distinct sections urging the toothed member into engagement with the serrated member.

309 With line unwinding limiter:

This subclass is indented under subclass 223. Subject matter having means to selectively limit the length of line that can be unwound from the spool.

310 Frame or static component:

This subclass is indented under subclass 223. Subject matter wherein particular significance is attributed to the frame or a frame component.

- (1) Note. The nominal appearance of spool or drive mechanism does not bar placement here if the frame or frame component is significant.

311 Spinning reel frame:

This subclass is indented under subclass 310. Subject matter wherein the frame supports the spool for axial unwinding.

312 Frame disassembly feature:

This subclass is indented under subclass 310. Subject matter wherein the reel frame is provided with at least one of: (a) quick release fastening means, (b) special disassembly access to parts, and (c) special support of parts during disassembly that facilitate reassembly.

- (1) Note. While a frame connected by a series of usual threaded fasteners fails to fit the above "quick release" criteria, frame components retained by a single threaded end cap would fit this and the indented subclasses.

313 Hinged frame section:

This subclass is indented under subclass 312. Subject matter wherein the reel frame includes major frame components connected together by a pivotal connection.

314 Rotated joint:

This subclass is indented under subclass 312. Subject matter wherein the reel frame supports a spool between a pair of end plates, at least one of which is connected to the frame by a joint (e.g., bayonet or keyhole), releasable upon rotation of the end plate about its axis.

315 Threaded:

This subclass is indented under subclass 314. Subject matter wherein the joint is a spiral thread-like coupling.

316 Reel support (e.g., reel foot):

This subclass is indented under subclass 310. Subject matter wherein the reel frame has a specific bracket for mounting the reel on a fishing rod.

317 Stub shaft support:

This subclass is indented under subclass 310. Subject matter wherein the reel frame includes a shaft supported at only one end and on which the spool is freely rotatable.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

251, for a spring motor driven spool which is supported on a stub shaft.

318 With spool retainer feature:

This subclass is indented under subclass 317. Subject matter wherein significance is attributed to a latch which releasably retains the spool on its shaft.

319 With line or water shield:

This subclass is indented under subclass 310. Subject matter wherein the frame or other reel component includes a gasket-like obstruction, seal or structure providing a tortuouse course to block the intrusion of foreign matter, e.g., water, line, grit, etc., into the interior of the reel.

320 With lubrication feature:

This subclass is indented under subclass 310. Subject matter including a device for facilitating the application of lubricant to a movable part of the reel.

321 With bearing feature:

This subclass is indented under subclass 310. Subject matter wherein particular significance is attribute to a specified bearing structure which is interposed between the frame and the drive mechanism or line take-up.

SEE OR SEARCH CLASS:

384, Bearings, appropriate subclasses for a bearing, per se.

322 Spool or spool shaft feature:

Subject matter under subclasses 223 wherein particular significance is attributed to a specific spool feature or material in combination with additional fishing reel structure (e.g., a support, adaptor, gear, etc.).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

118.4+, for a spool, per se.

323 Reel attachment:

This subclass is indented under subclass 223. Subject matter including a device ancillary to winding which is releasably connected to a conventional fishing reel or rod.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

294, for a manual brake attachment for a fishing reel which is removable.

324 UNWINDING AND REWINDING A MACHINE CONVERTIBLE INFORMATION CARRIER (E.G., MAGNETIC TAPE OR PHOTOGRAPHIC FILM):

This subclass is indented under the class definition. Apparatus or corresponding method for handling elongated material, specifically, information-bearing carrier having a signal or coating thereon which is transformable into a useful form, which apparatus or method involves the following cycle: (a) uncoiling the elongated material from a supply coil, (b) directing the material along a path past a work station (e.g., a transducer head, lens, or shut-

ter), of a utilization device, and (c) recoiling the material on a take-up coil.

- (1) Note. This and the indented subclasses provide for a winding system of a magnetic tape or wire player/recorder, photos:graphic projector, camera, or similar special machine. These subclasses take an original patent claiming a winding apparatus or method that may include a nominally recited work station or component of such a machine (e.g., a transducer head, lens, film gate, shutter, etc.). However, the recitation of either: (a) multiple work station components (e.g., a transducer plus an erase head or a lens plus a film feed claw), or (b) a specific work station (e.g., a transducer with spaced tracking areas or a lens with adjustable focusing means) that establish a particular cooperative relationship between the winding means and special machine bars classification in this class.
- (2) Note. In these subclasses, the term coil is used to include either: (a) a wound coil of material, per se, or (b) a rotatable coil support that includes a hub with or without flanges, which coil may simultaneously or sequentially perform both supply and take-up functions.
- (3) Note. The term information-bearing carrier denotes elongated material for transporting data or images converted by the utilization device distinct from control data that may be on the elongated material to be used as signals, etc., such as machine control indicia.

SEE OR SEARCH CLASS:

- 250, Radiant Energy, for details relating to a radiant energy device or component (e.g., a photocell control circuit) usable in a slack loop control, stop or reverse control, coil diameter sensor, etc., and particularly subclasses 200+ and 559.01.
- 352, Optics: Motion Pictures, appropriate subclasses, particularly subclasses 72+, 173+, 224+, 243, and 244+ for a projector or a projector component adapted to wind, tension, or guide film.

- 360, Dynamic Magnetic Information Storage or Retrieval, subclasses 69 through 74.7, 83 through 96.6, 132, and 134 for winding control and carrier support structure combined with structure peculiar to the transducing of a magnetic information signal.
- 396, Photography, appropriate subclasses and particularly subclasses 387+ for a camera structure with winding, feeding, or tensioning film and subclasses 612+ for photos:graphic medium feed in a fluid treating apparatus.
- 400, Typewriting Machines, appropriate subclasses, particularly subclass 242, 248, 512, 578+, 609+, and 613+ for unwinding and rewinding a typewriter tape past a keystroke work station, and a guide or tensioner component of such a machine.

324.1 Carrier helically or randomly wound (e.g., magnetic wire, edge wound film, etc.):

This subclass is indented under subclass 324. Subject matter in which the information-bearing carrier is wound into a coil having convolutions either: (a) displaced in a direction parallel to the axis of the coil, or (b) allowed to meander without regard for direction.

324.2 Cartridge storage:

This subclass is indented under subclass 324.1. Subject matter comprising structure mounting the supply and take-up coils as a single unit to be readily combined with or removed from the utilization device, which structure typically encloses the coils and associated carrier guide means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 326+, and 335+, for cartridge structure mounting a convolutely wound coil.

SEE OR SEARCH CLASS:

- 352, Optics: Motion Pictures, subclasses 72 through 78 for a magazine in a motion picture projector.
- 360, Dynamic Magnetic Information Storage or Retrieval, subclasses 92 through 96.6 and 132 for a magnetic tape cassette.

324.3 Carrier distributor:

This subclass is indented under subclass 324.1. Subject matter comprising a traversing mechanism (e.g., shiftable guide or spool) to evenly place consecutive convolutions of the information-bearing carrier during winding.

325 Endless coiled carrier (i.e., closed loop):

This subclass is indented under subclass 324. Subject matter wherein the information-bearing carrier has ends connected together to form a closed band wound into a plurality of convolutely arranged layers.

- (1) Note. The carrier is usually unwound from the center of a coil while it winds the outer convolution. Thus, the coil serves as a supply coil portion and a take-up coil portion.

SEE OR SEARCH THIS CLASS, SUBCLASS:

364.1+, for the winding and unwinding in the same direction of a more generalized elongated material.

SEE OR SEARCH CLASS:

- 40, Card, Picture, or Sign Exhibiting, particularly subclass 347, 385+, 470+, 514, and 529 for a winding device combined with a specific register, file, or changing exhibitor.
- 352, Optics: Motion Pictures, subclass 124 and 128 for endless film winding in a projector.
- 360, Dynamic Magnetic Information Storage or Retrieval, appropriate subclasses for winding an endless magnetic tape in a tape recorder/player or similar device.

325.1 Wound into superposed coil pair:

This subclass is indented under subclass 325. Subject matter wherein the endless information carrier is alternately wound in opposite directions between two spools provided with means to grip a middle portion of the carrier and simultaneously wind and unwind outward portions to form (or deplete) a double spiral winding.

- (1) Note. Initially a first spool normally supports the carrier wound into a double

spiral winding with an exterior work loop having, (a) a functioning leg extending past a work station, and (b) an idling leg passing directly to a second spool, so that both legs are simultaneously unwound from the first spool and wound onto the second spool. The first leg is moved past the work station and is thus utilized while the second leg is idly wound directly onto the second spool. Next, the drive direction is reversed to feed the second (previously idle) leg past the work station to utilize the remainder of the carrier, while the first (previously utilized) leg now directly winds back to the first spool. The whole coil has passed through the work station and is ready for replay without rewinding.

325.2 Having carrier responsive control:

This subclass is indented under subclass 325. Subject matter wherein the winding apparatus includes a mechanism (e.g., a speed controller) influenced by a detector sensitive to a change in a condition in the information-bearing carrier (e.g., slackness) to regulate or interrupt winding.

SEE OR SEARCH THIS CLASS, SUBCLASS:

333+, and 334+, for a control of an information bearing carrier having ends.

325.3 Reversible:

This subclass is indented under subclass 325. Subject matter comprising a drive mechanism for moving the information-bearing carrier in one direction for winding and unwinding, which mechanism is operable to move the carrier in an opposite direction.

326 Cartridge storage:

This subclass is indented under subclass 325. Subject matter comprising structure mounting the coiled carrier as a single unit to be readily united with or removed from the utilization device, and frequently enclosing the carrier.

- (1) Note. Typically, the cartridge encloses the coil.

SEE OR SEARCH THIS CLASS, SUBCLASS:

324.2, and 335+, for cartridges for helically wound and convolutely wound coils, respectively.

SEE OR SEARCH CLASS:

220, Receptacles, for receptacle construction that may be appropriate for a tape or film cartridge.

352, Optics: Motion Pictures, subclasses 72 through 78 for a magazine in a motion picture projector.

360, Dynamic Magnetic Information Storage or Retrieval, subclasses 92 through 96.6 and 132 for a magnetic tape cassette.

326.1 Insertion responsive component:

This subclass is indented under subclass 326. Subject matter comprising means actuated by the cartridge or the utilization device for movement between operating and nonoperating positions by operative association of the cartridge with the utilization device.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclasses 61.58+ for a switch specially designed to be responsive to article insertion in an environment that may be analogous to a tape cartridge.

326.2 Particular cartridge structure:

This subclass is indented under subclass 326. Subject matter wherein special significance is attributed to the formation or layout of the mounting structure.

326.3 Coil support:

This subclass is indented under subclass 326.2. Subject matter wherein particular significance is attributed to structure for rotatably supporting a coil of information-bearing carrier within the cartridge (e.g., a spool or hub bearing).

326.4 Carrier guide:

This subclass is indented under subclass 326.2. Subject matter wherein particular significance is attributed to structure spaced from the coil to define a path of movement for the carrier.

327 Particular coil support:

This subclass is indented under subclass 325. Subject matter wherein special significance is attributed to structure mounting a carrier coil for rotation (e.g., a spool or hub bearing).

327.1 To accommodate convolution speed variations:

This subclass is indented under subclass 327. Subject matter wherein the structure for mounting includes components (e.g., concentric rings or radiating tapered rollers) that collectively support edges of coil convolutions in a manner to reduce abrasion between convolutions of the coil resulting from variations in the angular velocities that develop between convolutions of a coil of material when the material is fed longitudinally while being coiled.

- (1) Note. An endless convolutely wound coil whose material is fed axially subjects each of the convolutions to move longitudinally requiring each convolution to move at a greater angular velocity than the adjacent outer convolution. Patents provided for here reduce the friction caused by the convolutions rubbing against each other by a tendency to drive each convolution or groups of convolutions at appropriately different speeds.

SEE OR SEARCH THIS CLASS, SUBCLASS:

327.4, for spaced coil supporting pulleys that may reduce the adverse effect of convolution speed variation.

327.2 Radial roller:

This subclass is indented under subclass 327. Subject matter wherein the coil mounting structure includes a rotary member radiating from an axis for receiving an end of the coil.

327.3 Multiple pulleys or hub rollers:

This subclass is indented under subclass 327. Subject matter wherein the mounting means is formed as rotatable wheels collectively supporting an inner peripheral portion of the coil.

327.4 Cooperating pulley pair:

This subclass is indented under subclass 327.3. Subject matter wherein two rotatable wheels or pulleys form a coil support.

328 Unwinding from coil center:

This subclass is indented under subclass 324. Subject matter wherein the information-bearing carrier is formed into a supply coil with inner and outer convolutions, and means is provided for directing the information-bearing carrier from the inner convolution.

328.1 Radially shiftable hub component:

This subclass is indented under subclass 328. Subject matter wherein either the supply or a take-up coil is provided with structure engaging the inner or outer coil periphery, which structure is either; (a) readily removable from the spool, or (b) movable transversely of the coil, to accommodate conditions prevalent in a coil during center withdrawal of material (e.g., a removable spacing element or yieldable peripheral retainer).

328.2 Driven supply coil:

This subclass is indented under subclass 328. Subject matter wherein the means for directing the carrier includes a mechanism separate from the carrier for rotating the supply coil.

329 Winding into coil center:

This subclass is indented under subclass 324. Subject matter wherein the information-bearing carrier is progressively wound into the inner convolution of the take-up coil to provide a leading end of the carrier on the outer convolution available for subsequent use.

329.1 Having coil hub expander:

This subclass is indented under subclass 329. Subject matter wherein the take-up coil is mounted on a support having a radially adjustable coil supporting component means to accommodate a build up of convolutions as they are wound.

330 Simultaneously driven carriers (e.g., separate optic and sound webs):

This subclass is indented under subclass 324. Subject matter comprising separate information-bearing carriers and a drive mechanism for unwinding, directing, and rewinding at least two carriers at the same time.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

530, for simultaneous, convolute winding of elongated material.

331 Intermediate storage (e.g., low inertia bin):

This subclass is indented under subclass 324. Subject matter comprising a buffer zone specifically provided for temporarily storing a length of information-bearing carrier between the supply coil and take-up coil, which length is significantly greater than the distance taken along a normal carrier path.

(1) Note. A buffer zone accommodates a low inertia reserve length of a carrier during periods of rapid carrier acceleration to avoid excessive carrier stress, or at times when driven components may not be in precise harmony.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

417+, for a reserve loop former used to control tension in a more generalized elongated material.

SEE OR SEARCH CLASS:

192, Clutches and Power-Stop Control, subclass 125 for a general use control stop responsive to length of material.

226, Advancing Material of Indeterminate Length, may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel driving or reel stopping means, etc.); subclass 97.2 for fluid current material moving means and means to store a web or subclasses 118.1+ for intermediate storage means between plural material-moving means.

331.1 Vacuum column:

This subclass is indented under subclass 331. Subject matter comprising means to create a negative pressure in a portion of the buffer zone to draw a length of material toward the zone.

331.2 Carrier responsive control:

This subclass is indented under subclass 331.1. Subject matter comprising a regulator sensitive to a condition of the carrier for determining the amount of the carrier in the buffer zone.

331.3 Pneumatic pressure controller:

This subclass is indented under subclass 331.2. Subject matter wherein the regulator comprises a device sensitive to the air pressure or its flow to regulate the amount of carrier in the buffer zone.

331.4 Photoelectric controller:

This subclass is indented under subclass 331.2. Subject matter wherein the regulator comprises a radiation source (e.g., a light beam) and an electron emission receiving device for generating a signal proportionate to the length of carrier in the buffer zone.

SEE OR SEARCH CLASS:

250, Radiant Energy, for a detail of a photoelectric device, per se, or in combination with generalized structure, particularly subclasses 200+ and 559.01.

331.5 Having spool or carrier brake control:

This subclass is indented under subclass 331. Subject matter comprising a retarding device acting on either a running length of coiled carrier to create or regulate the length of carrier in the buffer zone.

332 Including threading:

This subclass is indented under subclass 324. Subject matter comprising a system to facilitate advancement of a leading end of the information-bearing carrier from the supply coil, along an entrance path of the work station to the take-up coil.

- (1) Note. The entrance path indicates a predetermined course that the carrier should take as it is operated by the utilization device, typically along a guide system to properly relate the carrier to a transducer or optic device.

SEE OR SEARCH CLASS:

396, Photography, appropriate subclasses and particularly subclasses 387+ for a camera structure with winding, feeding, or tensioning film and subclasses 612+ for photos:graphic medium feed in a fluid treating apparatus.

332.1 Having particular automated control:

This subclass is indented under subclass 332. Subject matter wherein special significance is attributed to a regulating means of the threading device operable in response to associating the supply coil with the utilization device or a similar operation, which means is designed to function without further user intervention.

332.2 Actuated by lead end sensor:

This subclass is indented under subclass 332.1. Subject matter wherein operation of the regulating means is initiated by detection of a forward portion of the carrier.

332.3 Having pneumatic assist:

This subclass is indented under subclass 332. Subject matter wherein the threading system includes a mechanism for directing positively or negatively pressurized air in proximity to the carrier to influence progression of the carrier along the path.

SEE OR SEARCH CLASS:

226, Advancing Material of Indeterminate Length, may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel driving or reel stopping means, etc.), subclasses 97.1+ for fluid current means to advance the material.

332.4 Having leader gripper or coupling:

This subclass is indented under subclass 332. Subject matter comprising a length of special material connected to the leading end of the carrier that is adapted to be grasped or joined to a carrier advancing means.

- (1) Note. The leader is typically a strip somewhat stiffer than the carrier and it may have special configuration or width

to aid in progression along the threaded path.

332.5 Having rotary extractor (e.g., stripper):

This subclass is indented under subclass 332. Subject matter wherein the threading system includes an orbited device adapted to engage and withdraw the outermost convolution of carrier from the supply coil.

332.6 Endless belt:

This subclass is indented under subclass 332.5. Subject matter wherein the orbited device is in the form of a closed, flexible loop driver to impart movement to the carrier.

332.7 Having carrier to spool attachment means:

This subclass is indented under subclass 332. Subject matter wherein the threading system includes a gripper for connecting the leading end of the carrier to a take-up station, usually a spool.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

532+, for a winding machine with particular means for retaining an end of material to be wound.

579+, for a coil holder with particular means for retaining an end of material to be wound.

332.8 Slotted spool:

This subclass is indented under subclass 332.7. Subject matter wherein the take-up coil is wound on a coil support, typically a spool or similar device, having an elongated slit into which the carrier is received and held.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

532.6, and 587+, for an apertured take-up to facilitate a connection between the take-up and a material to be wound thereon.

333 Automated stop or reverse:

This subclass is indented under subclass 324. Subject matter comprising a drive mechanism operative to advance the information-bearing carrier in one direction during winding and a controller to either: (a) halt operation of the drive mechanism, or (b) cause the carrier to

move in a second, opposite direction, without user intervention.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

410+, for a sensor adapted to respond to various conditions for regulating tension in a running length of material.

534+, and 563+, for a detector or stop in a winding or unwinding machine.

SEE OR SEARCH CLASS:

192, Clutches and Power-Stop Control, subclass 125 for a material control stop, per se, of general use.

200, Electricity: Circuit Makers and Breakers, subclasses 61.13+ for a circuit maker/breaker specially designed for operation by a running web or strand, spool, or guide.

250, Radiant Energy, for a detail of a photoelectric device, per se, or in combination with generalized structure, particularly subclasses 200+ and 559.01.

360, Dynamic Magnetic Information Storage or Retrieval, subclasses 69 through 74.7, and 83 through 96.6 for winding control and carrier support structure combined with structure peculiar to the transducing of a magnetic information signal.

333.1 Diverse control signal inputs:

This subclass is indented under subclass 333. Subject matter wherein the controller is responsive to information generated from dissimilar sources.

(1) Note. One of the information sources may include a preprogrammed reference signal used for comparison to a second signal generated as a consequence of winding.

333.2 Carrier supported signal:

This subclass is indented under subclass 333. Subject matter wherein the carrier bears an indicant used to generate a signal to the controller.

333.3 Carrier engaging tension sensor:

This subclass is indented under subclass 333. Subject matter wherein the controller includes a carrier guide shiftable in response to stress variation in the carrier.

333.4 Electrical control:

This subclass is indented under subclass 333.3. Subject matter wherein particular significance is attributed to a portion of the controller that converts a shift of the guide into an electronic signal.

333.5 Coil diameter sensor:

This subclass is indented under subclass 333. Subject matter wherein the controller includes an operator actuated by the changing radial dimension of carrier wound on either the supply or take-up coil.

333.6 Coil rotation sensor:

This subclass is indented under subclass 333. Subject matter wherein the controller includes an input device actuated in response to rotation of either: (a) the supply or take-up coil, or (b) structure (e.g., a drive element) rotatable with one of the coils.

333.7 Electrical control:

This subclass is indented under subclass 333.6. Subject matter wherein particular significance is attributed to a portion of the controller that converts a signal from the input device into an electronic signal.

334 Carrier speed or tension control:

This subclass is indented under subclass 324. Subject matter wherein a drive mechanism for winding the information-bearing carrier includes regulating means for insuring either, (a) carrier movement at a desired rate, or (b) a desired level of longitudinal stress in the carrier.

- (1) Note. Movement of the carrier past a utilization station normally is kept at a constant predetermined speed often maintained by regulating tension in the carrier as conditions vary.

SEE OR SEARCH CLASS:

- 200, Electricity: Circuit Makers and Breakers, subclasses 61.13+ for a circuit maker/breaker specially designed for operation by a running web or strand, spool, or guide.
- 250, Radiant Energy, for a detail of a photoelectric device, per se, or in combination with generalized structure, particularly subclasses 200+ and 559.01.
- 360, Dynamic Magnetic Information Storage or Retrieval, particularly subclasses 69 through 74.7 for winding control and carrier support structure combined with structure peculiar to the transducing of a magnetic information signal.

334.1 Plural speeds:

This subclass is indented under subclass 334. Subject matter wherein the regulating means comprises a selector for establishing alternative carrier movement rates.

334.2 Diverse signal inputs:

This subclass is indented under subclass 334. Subject matter wherein the regulating means includes a mechanism responsive to multiple control inputs from dissimilar sources for regulating the rate of movement of the carrier.

334.3 Tachometer-type signal device:

This subclass is indented under subclass 334.2. Subject matter wherein one of the control input sources counts turns of a rotatable element adapted to turn in proportion to a rate of movement of the carrier.

334.4 Tachometer-type signal device:

This subclass is indented under subclass 334. Subject matter wherein the regulating means includes a mechanism responsive to an input signal that counts turns of a rotatable element whose speed is proportional to the rate of movement of the carrier.

334.5 Coil diameter or weight responsive sensor:

This subclass is indented under subclass 334. Subject matter wherein the regulating means includes a mechanism responsive to an input signal representative of either the diametrical

extent or gravitational force acting on a wound portion of the carrier.

334.6 Carrier tension responsive signal:

This subclass is indented under subclass 334. Subject matter wherein the regulating means includes an input device sensitive to longitudinal stress in the carrier.

335 Cartridge system (i.e., cartridge work station or cartridge):

This subclass is indented under subclass 324. Subject matter comprising (a) a coil of information-bearing carrier mounted on or within a housing, tray, or similar support to form a unit removable and repositionable with respect to the work station, (b) a work station structure particularly designed to receive and relate such unit to the work station, or (c) a combination of such a unit and a utilization structure.

- (1) Note. Cartridge system is used to denote either a coil support unit (cassette or magazine), a cartridge utilization device (e.g., a player, projector, or camera), or the combination of the two.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

324.2+, and 326+, for cartridge structure for helically or randomly wound carrier and endless carrier, respectively.

SEE OR SEARCH CLASS:

- 40, Card, Picture, or Sign Exhibiting, subclasses 385+ and 486+ for wound material that may include cartridge storage used in an exhibit or sign.
- 352, Optics: Motion Pictures, subclasses 72 through 78 for a magazine in a motion picture projector.
- 360, Dynamic Magnetic Information Storage or Retrieval, particularly subclasses 83 through 85, 89 through 96.6, 132, and 134 for carrier support structure combined with structure peculiar to the transducing of a magnetic information signal.
- 378, X-Ray or Gamma Ray Systems or Devices, subclasses 182+ for a sheet film cassette combined with a specified X-ray or gamma ray device.

- 396, Photography, subclasses 511+ for a detachable or removable film holder in a camera.

336 Adaptive or convertible:

This subclass is indented under subclass 335. Subject matter wherein the work station or cartridge is designed for convenient modification to operate more than one style of cartridge (e.g., a work station with an adjustable drive spindle or a cartridge carrier adapted to receive a second cartridge to enable the second cartridge to conform with a particular work station).

337 Plural (i.e., multiple cartridges per work station):

This subclass is indented under subclass 335. Subject matter wherein multiple units or cartridges are arranged for selective movement into an operative association with a work station (e.g., a magnetic transducer or film projector lens).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

324.2, and 326+, for cassette structure for magnetic wire and endless tape, respectively.

SEE OR SEARCH CLASS:

- 352, Optics: Motion Pictures, subclasses 72 through 78 for a magazine in a motion picture projector.
- 360, Dynamic Magnetic Information Storage or Retrieval, subclasses 92 through 96.6 for a magnetic tape cassette.

337.1 Coil to coil:

This subclass is indented under subclass 337. Subject matter wherein each unit or cartridge encloses a carrier wound into a supply coil and a separate take-up coil.

338 With insertion responsive component:

This subclass is indented under subclass 335. Subject matter wherein the utilization device or cartridge includes control structure actuated in response to shifting of the cartridge into an operative relationship with the utilization device to influence winding or unwinding.

- (1) Note. Insertion of the cartridge is used here to denote juxtaposing the cartridge in a working relationship to the utilization device (i.e., on or within the utilization device).

SEE OR SEARCH THIS CLASS, SUBCLASS:

326.1, for insertion responsive cartridge with an endless tape or film.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclasses 61.58+ for a switch specially designed to be responsive to article insertion in an environment that may be analogous to a tape cartridge.

338.1 Releasable brake:

This subclass is indented under subclass 338. Subject matter wherein the control structure comprises means engageable with the carrier, coil, or a spool supporting the carrier to retard or prevent carrier movement until the means is shifted to a disengaged position upon insertion of the cartridge into the utilization device.

338.2 With shiftable cover actuator:

This subclass is indented under subclass 338.1. Subject matter wherein the cartridge includes a lid shifted in response to insertion of the cartridge into a utilization device to reposition the engageable means for free movement of the carrier.

338.3 Acting on plural coils:

This subclass is indented under subclass 338.1. Subject matter wherein the retarding member is adapted to operate within a cartridge containing separate supply and take-up coils.

338.4 Cartridge positioner:

This subclass is indented under subclass 338. Subject matter wherein the control structure precisely locates the cartridge with respect to components of the utilization device for proper interaction of the carrier and work station.

SEE OR SEARCH CLASS:

360, Dynamic Magnetic Information Storage or Retrieval, subclass 92 and 93+ for a cartridge device claimed with a particular transducing structure.

339 Cartridge ejector:

This subclass is indented under subclass 335. Subject matter wherein the utilization device and/or cartridge include a mechanism for disassociating the carrier from the work station, typically ejecting the cartridge away from the work station.

340 With particular drive mechanism:

This subclass is indented under subclass 335. Subject matter wherein special significance is attributed to a coil or capstan power transmission means specifically to receive a removable cartridge.

341 Coil-to-coil cartridge:

This subclass is indented under subclass 335. Subject matter wherein the housed coil unit (cartridge) has separate supply and take-up coils.

SEE OR SEARCH CLASS:

29, Metal Working, subclass 806 for assembly apparatus for film or tape cartridge components.

40, Card, Picture, or Sign Exhibiting, subclasses 385+ and 518+ for wound material that may include cartridge storage used in an exhibit or sign.

220, Receptacles, for receptacle construction that may be appropriate for a tape or film cartridge.

352, Optics: Motion Pictures, subclasses 72 through 78 for a magazine in a motion picture projector.

360, Dynamic Magnetic Information Storage or Retrieval, particularly subclasses 83 through 85, 89 through 96.6, 132, and 134 for carrier support structure combined with structure peculiar to the transducing of a magnetic information signal.

396, Photography, subclasses 511+ for a detachable or removable film holder in a camera.

342 With particular drive coupling:

This subclass is indented under subclass 341. Subject matter wherein special significance is attributed to a mechanism associated with a coil or a drive capstan within the cartridge to apply force to the elongated material to cause winding or unwinding.

343 With brake or lock:

This subclass is indented under subclass 341. Subject matter wherein the cartridge includes means to retard or prevent unwanted rotation of the carrier or carrier coil in at least one direction.

343.1 Yieldable brake:

This subclass is indented under subclass 343. Subject matter wherein the cartridge is provided with means for retarding: (a) rotation of a spool, or (b) longitudinal movement of the carrier.

- (1) Note. The means for retarding must allow slippage between itself and the spool or carrier on which it acts as contrasted with a positive brake.

343.2 Spool or coil engaging:

This subclass is indented under subclass 343.1. Subject matter wherein the means for retarding is adapted to engage the coil support or material wound on the support.

344 With indicator or detector:

This subclass is indented under subclass 341. Subject matter wherein the cartridge includes a device for either: (a) measuring the length or other physical condition of the carrier, or (b) sensing a physical condition (e.g., completion of a winding or unwinding cycle or a particular type of cartridge).

- (1) Note. The measuring is not limited to a specific linear indicia, but may indicate a portion of material to be wound/unwound or time required to wind/unwind.

345 With particular coil support:

This subclass is indented under subclass 341. Subject matter wherein special significance is attributed to structure mounting the carrier coil for rotation.

- (1) Note. It is common to mount the carrier coil on a rotatable hub having one or two coil supporting flanges, or no flange at all with the coil resting on static surface or liner of the cartridge.

345.1 Coaxial coils:

This subclass is indented under subclass 345. Subject matter wherein the mounting structure relates two or more coils on the same axis of rotation.

345.2 Spring pressed coil or spool:

This subclass is indented under subclass 345. Subject matter wherein the mounting structure includes resilient means active in at least one mode to restrain free movement of a coil or convolution of a coil, typically to reduce or distribute drag in a rotating coil or prevent unwanted upward convolution migration.

345.3 Coil on liner:

This subclass is indented under subclass 345. Subject matter wherein the mounting structure includes means to cover or coat at least a portion of an area of contact between the mounting structure and coil, typically to regulate frictional drag or static electrical charges.

SEE OR SEARCH CLASS:

220, Receptacles, subclass 23.9, 62.21, 495.01+, 574.3, and 908.1+ for a receptacle lining that may be appropriate for a cartridge.

346 With particular guide or guard:

This subclass is indented under subclass 341. Subject matter wherein special significance is attributed to either (a) guide means for engaging and directing movement of the carrier, or (b) guard means to confine the carrier to a desired path, during winding or unwinding.

346.1 Shiftably mounted:

This subclass is indented under subclass 346. Subject matter comprising structure supporting the guide or guard means for movement between distinct positions (e.g., operating and storage positions) or positions varied with changes in the diameter of a carrier coil.

346.2 Rotatable:

This subclass is indented under subclass 346. Subject matter comprising structure supporting the guide or guard means for unlimited arcuate movement about an axis.

347 With particular housing construction:

This subclass is indented under subclass 341. Subject matter wherein special significance is attributed to a housing configuration or material from which the housing is constructed.

SEE OR SEARCH CLASS:

220, Receptacles, particularly subclasses 600+, 639+, and 660+ for receptacle construction that may be appropriate to a cartridge.

347.1 Shiftable closure (e.g., door):

This subclass is indented under subclass 347. Subject matter wherein the housing structure forms an enclosure provided with an opening selectively closed by a movable panel or door.

SEE OR SEARCH THIS CLASS, SUBCLASS:

338, and 338.2, for a latch for a closure that is released due to interaction between the cartridge and the utilization device.

SEE OR SEARCH CLASS:

220, Receptacles, subclasses 200+ for receptacle closure construction that may be appropriate for a cartridge.

347.2 Separable or hinged sections:

This subclass is indented under subclass 347. Subject matter wherein the enclosure structure of the cartridge includes two major enclosure portions (e.g., a receptacle with a removable cover, detachable end halves, etc.) capable of relative movement between open and closed or assembled positions.

- (1) Note. For placement here, the major enclosure portions must be separable or shiftable to open enough to permit transfer of a normal carrier coil in contrast to opening a carrier guide aperture, window, or door.

SEE OR SEARCH CLASS:

220, Receptacles, subclasses 334+ for hinged receptacle structure that may be appropriate for a cartridge.

348 Single coil cartridge (e.g., film magazine):

This subclass is indented under subclass 335. Subject matter wherein the cartridge is adapted to retain but a single coil, typically a coil of film adapted to be fed to a lens or controlled aperture.

SEE OR SEARCH CLASS:

29, Metal Working, subclass 806 for assembly apparatus for film or tape cartridge components.
40, Card, Picture, or Sign Exhibiting, subclasses 385+ and 514+ for wound material that may include cartridge storage used in an exhibit or sign.
220, Receptacles, for receptacle construction that may be appropriate for a tape or film cartridge.
396, Photography, subclasses 511+ for a detachable or removable film holder in a camera.

348.1 With carrier inner end collector:

This subclass is indented under subclass 348. Subject matter wherein the cartridge includes structure particularly adapted to capture a leading portion of the carrier being introduced into the cartridge and direct this portion in a manner to enhance orderly winding.

348.2 With carrier outer end retainer:

This subclass is indented under subclass 348. Subject matter wherein the cartridge includes means for releasably grasping a radially accessible end portion of the carrier or a carrier borne fitting (block) to provide convenient access to the carrier end.

348.3 With means to facilitate unwinding:

This subclass is indented under subclass 348. Subject matter wherein the cartridge includes structure to promote movement of the elongated material, particularly its leading end, from the cartridge.

348.4 Light occludent:

This subclass is indented under subclass 348. Subject matter wherein the cartridge is constructed in a particular manner to exclude unwanted light into the cartridge interior, typically to avoid light exposure on photosensitive film.

SEE OR SEARCH THIS CLASS, SUBCLASS:

588.5, for light occludent structure in a coil holder.

SEE OR SEARCH CLASS:

396, Photography, particularly subclasses 511+ and 589+ for light occludent structure in a camera or fluid treatment environment.

349 With particular drive:

This subclass is indented under subclass 324. Subject matter wherein special significance is attributed to a mechanism for causing the information-bearing carrier to be unwound or rewound, which mechanism may include one or more specific (a) energy source, (b) energy converter, (c) transmission, (d) coupling, (e) brake or stop, or (f) controller.

SEE OR SEARCH THIS CLASS, SUBCLASS:

540+, and 564+, for a particular drive in a winding or unwinding machine of elongated material.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, for a transmission, mechanical movement, or component of general use.
192, Clutches and Power-Stop Control, for a drive mechanism controller.
352, Optics: Motion Pictures, for a detail of a drive means peculiar to a motion picture projector.
360, Dynamic Magnetic Information Storage or Retrieval, particularly subclasses 83 through 85, 89 through 96.6, 132, and 134 for carrier support structure combined with structure peculiar to the transducing of a magnetic information signal.

396, Photography, appropriate subclasses and particularly subclasses 387+ for a camera structure with winding, feeding, or tensioning film and subclasses 612+ for photos:graphic medium feed in a fluid treating apparatus.

350 Manual:

This subclass is indented under subclass 349. Subject matter wherein the drive mechanism includes a torque input element adapted to be powered by the user.

SEE OR SEARCH THIS CLASS, SUBCLASS:

282, through 284, for a particular crank in a fishing reel.
395+, for a particular manual drive in a reeling device.
546.1, for a manual drive in a winding machine.
564.2, for a manual drive in an unwinding machine.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclasses 594.1+ for a detail of a crank of general use.

351 Nonelectrical motor:

This subclass is indented under subclass 349. Subject matter wherein the drive mechanism includes an energy converter (motor) deriving force from an expanding spring, falling weight, dynamic fluid, or other nonelectrical source to cause winding or unwinding, which converter may be charged by an electric motor.

352 Simultaneous drive to supply and take-up coils:

This subclass is indented under subclass 349. Subject matter wherein the drive mechanism includes a drive input acting on both the supply and take-up spools at the same time (e.g., a single motor acting through a divergent transmission to each spool).

(1) Note. The drive input may tend to rotate the coils in the same or opposite directions.

352.1 Each drive a motor:

This subclass is indented under subclass 352. Subject matter wherein the input includes a separate energy converter (motor) for each of the supply and take-up coils.

352.2 With additional linear feed drive motor:

This subclass is indented under subclass 352.1. Subject matter wherein an additional motor powers a carrier advancing means (e.g., a capstan, sprocket, or feed claw) adapted to engage and move the carrier at a point spaced from the supply and take-up coils.

352.3 Coil engaging drive:

Subject matter under 352 wherein the drive mechanism includes a carrier advancing means (e.g., a drive roller or belt) adapted to contact a surface of the wound carrier to impart winding or unwinding rotation to the coil.

352.4 Endless belt:

This subclass is indented under subclass 352.3. Subject matter wherein the carrier advancing means includes a flexible, closed loop member adapted to engage the supply or the take-up coil.

SEE OR SEARCH THIS CLASS, SUBCLASS:

541.3, for an endless belt drive in a convolute winding device.

352.5 Multiple carrier speeds:

This subclass is indented under subclass 352. Subject matter wherein the drive mechanism includes means providing a plurality of selectable carrier drive rates, which rates may occur in the same or opposite directions of carrier movement.

353 With yieldable loop former:

This subclass is indented under subclass 349. Subject matter wherein the drive mechanism is associated with means (e.g., a biased guide) adapted to contact the carrier to create or maintain a desired level of longitudinal stress in the carrier during unwinding or rewinding.

- (1) Note. This subclass excludes brakes or speed control mechanism acting on the carrier provided for elsewhere in this schedule.

354 Particular linear feeder (e.g., capstan or sprocket):

This subclass is indented under subclass 349. Subject matter wherein the drive mechanism includes advancing means engageable with the carrier at a point spaced from the supply or take-up coil for moving the carrier at a uniform rate, and special significance is attributed to this feeder.

SEE OR SEARCH CLASS:

226, Advancing Material of Indeterminate Length, may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel driving or reel stopping means, etc.); subclasses 52+ having means to engage longitudinally spaced modifications in material; subclasses 120+ for an intermittent (interrupted) material-mover; or subclasses 168+ having orbitally traveling material-engaging surface(s).

400, Typewriting Machines, subclasses 578+ and 902 for a feeding device in a typewriter.

354.1 Plural:

This subclass is indented under subclass 354. Subject matter wherein the drive mechanism includes multiple carrier advancing means.

354.2 With particular manual controller:

This subclass is indented under subclass 354. Subject matter wherein special significance is attributed to an actuator under the control of a user for regulating the linear feeder (e.g., to engage or disengage the feeder with the carrier).

355 With brake or stop:

This subclass is indented under subclass 349. Subject matter wherein the drive mechanism is associated with a device for (a) retarding or (b) terminating winding or unwinding of the carrier.

SEE OR SEARCH CLASS:

188, Brakes, appropriate subclasses for brakes, their operators, and similar

components as subcombinations and in generalized use.

355.1 Radially applied:

This subclass is indented under subclass 355. Subject matter wherein the means for retarding or terminating winding or unwinding is applied to a spool or an element rotated with spool in a direction substantially transverse to the axis of coil rotation.

SEE OR SEARCH CLASS:

188, Brakes, subclasses 74+ for radially applied brakes, per se, and in general use.

355.2 By manual operator:

This subclass is indented under subclass 355.1. Subject matter wherein the device for retarding or terminating winding or unwinding is shifted in response to user pressure applied directly through associated linkage.

356 Alternately or differently driven coils:

This subclass is indented under subclass 349. Subject matter wherein the drive mechanism acts on the supply and take-up coils at different times or in a different manner.

SEE OR SEARCH CLASS:

40, Card, Picture, or Sign Exhibiting, subclasses 385+ and 446+ for a spool drive in a winding device for a sign or similar exhibit.
192, Clutches and Power-Stop Control, appropriate subclasses for clutches, clutch-brakes, and power-stop controls as a subcombination or in general use.
396, Photography, appropriate subclasses and particularly subclasses 387+ for a camera structure with winding, feeding, or tensioning film and subclasses 612+ for photos:graphic medium feed in a fluid treating apparatus.

356.1 Coaxial coils:

This subclass is indented under subclass 356. Subject matter wherein the supply and take-up coils are supported for rotation about a common axis.

356.2 Step-driven coil:

This subclass is indented under subclass 356. Subject matter wherein the drive mechanism includes means for rotating the coils in predetermined increments, usually by an oscillated or reciprocated pawl or rack.

356.3 Multiple carrier speeds:

This subclass is indented under subclass 356. Subject matter wherein the drive mechanism includes transmission means providing plural winding or unwinding rates.

356.4 With particular manual controller:

This subclass is indented under subclass 356.3. Subject matter wherein the transmission means includes a significant manual operator for selecting a desired rate or direction of winding or unwinding.

356.5 By friction drive:

This subclass is indented under subclass 356. Subject matter wherein the drive mechanism includes a driving element relying on cohesive force for rotating a driven element connected to rotate the take-up spool.

356.6 With one-way clutch:

This subclass is indented under subclass 356.5. Subject matter wherein the drive mechanism additionally includes a device for transmitting rotation in one direction and allowing slippage in the opposite direction.

SEE OR SEARCH CLASS:

192, Clutches and Power-Stop Control, subclasses 41+ for a one-way clutch, per se, or in general use.

356.7 Radially acting wheel, disk, or belt:

Subject matter under 356.5 wherein the frictional driving element transfers torque to the driven element by pressure applied in a plane transverse to an axis of rotation of the driving element.

357 With detector or indicator (e.g., length scale):

This subclass is indented under subclass 324. Subject matter comprising a device to apprise the user of a value representing a status of the information-bearing carrier or physical condition of the apparatus for handling the carrier.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 410+, for a sensor adapted to respond to various conditions for regulating tension in a running length of material.
534+, and 563+, for a detector or stop in a winding or unwinding machine.

SEE OR SEARCH CLASS:

- 200, Electricity: Circuit Makers and Breakers, subclasses 61.13+ for a circuit maker/breaker specially designed for operation by a running web or strand, spool, or guide.
250, Radiant Energy, for a detail of a photoelectric device, per se, or in combination with generalized structure, particularly subclasses 200+ and 559.01.

358 Particular frame or frame attachment:

This subclass is indented under subclass 324. Subject matter wherein particular significance is attributed to structure establishing a fundamental arrangement between the take-up coil, supply coil, work station, or a carrier guide path or a component of such support structure (e.g., an extensible frame arm, cabinet structure, static coil storage magazine, or arrangement of guides).

358.1 Including spool support:

This subclass is indented under subclass 358. Subject matter wherein specific means is provided to directly bear either the take-up or supply coil.

360 LOOP FORMING (E.G., WINDING A BUNDLE OF WIRE COILS):

This subclass is indented under the class definition. Apparatus or method for either, (a) progressively winding an elongated material into convolutions (loops) to provide a coreless storage package tending to maintain its shape as a consequence of winding, or (b) ancillary means intimately associated with such winding apparatus for transferring successive convolutions (loops) or convolution groups (bundles) from the winding apparatus.

- (1) Note. Apparatus or method for specifically bending material beyond its elastic limit is excluded from this class.

- (2) Note. To be placed in this or indented subclasses the winding device must be of the type in which the loops of material are transferred individually or in unbound groups from one support to another with no substantial change in their looped shape. e.g., the loops may be formed by winding upon a cylindrical form rotating about a vertical axis and subsequently fall axially over the lower end of the form onto and over a stationary core or into a container, the shape of the loops remaining substantially unchanged during this transfer process. Apparatus and methods for making coreless wound packages, packages of coils supported internally to maintain their shape, or packages that undergo substantial changes in shape after formation are provided for elsewhere. See the search notes below.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 364+, for a capstan-type device for winding and unwinding material in a single direction.
430+, for permanently winding material including wire onto a core to make a composite article.
470+, for helical or random winding of material, particularly subclass 472.5 for winding of material to form a coreless package.

SEE OR SEARCH CLASS:

- 19, Textiles: Fiber Preparation, subclass 159 as appropriate for coiling a sliver into a can and can replacement.
72, Metal Deforming, subclasses 66+ and 135+ for the coiling of metal purposely bent beyond its elastic limit.
140, Wireworking, subclass 71, 92.1, 92.2, and 124 for the coiling of wire beyond its elastic limit.

361 By orbital guide:

This subclass is indented under subclass 360. Subject matter wherein the winding apparatus includes a driven material dispenser (flyer or coiling head) movable about a path to establish a loop about a winding axis.

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, subclass 159 for orbital guide used to coil a sliver (strand of loose, untwisted fibers) into a can.

361.1 Simultaneous or successive winding:

This subclass is indented under subclass 361. Subject matter wherein the winding apparatus comprises either, (a) multiple orbital material guides for concurrently winding loops, or (b) discrete loop receiving forms sequentially introduced to an orbital dispenser.

361.2 About internal loop form:

This subclass is indented under subclass 361. Subject matter comprising a body, typically a cylindrical stationary block, around which the elongated material is placed by the orbital guide.

361.3 With loop discharge device:

This subclass is indented under subclass 361.2. Subject matter comprising specific means for expelling or directing one loop from the form as a new loop is dispensed.

361.4 With loop collector:

This subclass is indented under subclass 361. Subject matter comprising a specific receptacle, spindle, or other support for gathering loops into a group (bundle).

361.5 With loop bundle unloader:

This subclass is indented under subclass 361.4. Subject matter comprising a device for collectively removing or releasing a group of loops (bundle) from the loop collector.

362 By rotatably driven loop collector:

This subclass is indented under subclass 360. Subject matter wherein the winding apparatus includes a power input means for rotating a take-up member (e.g., spindle, mandrel, capstan, or receptacle) to cause the elongated material to be temporarily coiled on or in the take-up.

362.1 Simultaneous or successive winding:

This subclass is indented under subclass 362. Subject matter wherein the winding apparatus comprises either, (a) multiple rotatably driven take-ups for concurrently winding loops, or (b)

discrete take-ups sequentially rotated to form loops.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

439.4+, and 443.1+, for simultaneously winding material from plural sources onto a core to form an article.

440+, and 445+, for sequentially winding material onto one or more cores to form one or more articles.

470+, for simultaneously winding wires onto storage spools.

474.3+, for alternate or successive winding of thread onto a spool.

530+, for simultaneously winding convolute coils.

531+, for sequential convolute coil winding stations.

362.2 With loop bundle unloader:

This subclass is indented under subclass 362. Subject matter comprising a device for removing or releasing a collection of loops (bundle) from the rotatably driven take-up.

362.3 Stripper plate or arm:

This subclass is indented under subclass 362.2. Subject matter wherein the device for removing the loop bundle includes an ejecting member adapted to either, (a) push the loop bundle from the take-up, or (b) withdraw the collector axially from the bundle.

363 With particular loop or coil transfer mechanism:

This subclass is indented under subclass 360. Subject matter wherein special significance is attributed to structure for causing or facilitating either, (a) the displacement of successive loops of material to or from a form or collector, or (b) a conveyance for a bundle of loops from a form or collector.

SEE OR SEARCH CLASS:

226, Advancing Material of Indeterminate Length, particularly subclasses 104+ for a device to advance loops of elongated material.

364 UNIDIRECTIONAL WINDING AND UNWINDING:

This subclass is indented under the class definition. Apparatus or method for winding an indefinite length material onto a support in one rotary direction and simultaneously permitting the material to unwind in the same rotary direction.

- (1) Note. The coil may have a single actual axis or a theoretical composite axis formed by a series of pulleys, rollers, or spools.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 325+, for unidirectional winding of information-bearing carrier.
 364+, for an apparatus for simultaneously winding and unwinding material onto and from a storage support.
 602.1+, for a spool with convolution separator that may facilitate unidirectional winding.

SEE OR SEARCH CLASS:

- 226, Advancing Material of Indeterminate Length, may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel driving or reel stopping means, etc.); subclass 97.2 for fluid current material moving means and means to store a web; subclasses 118.1+ for intermediate storage means between plural material moving means; or subclasses 168+ having orbitally traveling material-engaging surface(s).
 254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclass 373 for a cable-winding capstan of a winch.

364.1 Convolute coil:

This subclass is indented under subclass 364. Subject matter wherein each convolution is placed upon a previous convolution.

364.11 Partial wrap around plural rotatable supports:

This subclass is indented under subclass 364. Subject matter in which the support comprises an assemblage of elements rotatable relative to one another that collectively form a surface on which the material is wound and are arranged such that at least one single loop of material encloses and contacts each of the elements.

- (1) Note. One or more (but not all) of the elements may be stationary. There must be a relative rotation between the elements of at least 360 degrees. A support consisting of two rotatable elements having slightly spaced axes of rotation and having equal numbers of axially extending bars that interdigitate do not rotate significantly relative to each other, but substantially only translate relative to each other and, therefore, is not placed in this subclass.

364.12 Shifting material axially:

This subclass is indented under subclass 364.11. Subject matter in which the material wound on the support is moved axially on and relative to the support during operation.

- (1) Note. The material need not slide on the surface of one of the rotary supports to meet the requirements of this definition. The material may be acted upon between rotary supports to cause it to engage the next support at a location axially spaced from the last one.
 (2) Note. For placement in this subclass, there must be structure specifically designed to shift the material. Forcing of wound material axially by mere engagement with newly introduced material is not sufficient in absence of structure to force the new material axially.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 366.2, for axial material shifting means having general application to unidirectional winding and unwinding devices.

364.2 Distinct supporting surface on a support:

This subclass is indented under subclass 364. Subject matter in which each element is constructed so as to positively confine each contacting portion of material to a limited region of the element.

- (1) Note. The coil may be created as a single run of elongated material being sequentially trained as a single pass over a substantial number of spaced apart guide elements.

364.3 With radial spacing regulator:

This subclass is indented under subclass 364.2. Subject matter wherein at least one of the supporting elements is mounted for movement with respect to another element (e.g., to regulate the tension in a length of the elongated material).

364.4 Threading:

This subclass is indented under subclass 364. Subject matter in which the initial end of the material is automatically introduced onto the support or moved over the support to initiate a winding operation.

364.5 Convertible between variable and fixed number of windings on material support:

This subclass is indented under subclass 364. Subject matter in which the device can be operated either in a mode in which the number of turns or loops of material on the support is constant during operation or in a mode in which the number of turns is variable with only minor adjustment.

364.6 Variable number of windings on support:

This subclass is indented under subclass 364. Subject matter in which number of turns or loops of material on the support is caused or permitted to vary during operation, i.e., the rates of winding and unwinding onto the support may be unequal.

- (1) Note. For placement in this subclass, a patent must recite an element, such as a flyer that places material onto the material support or a guide that removes material over an end of the support, that enables material to be supplied to or removed from the support at a rate inde-

pendent of the rate at which it is removed or supplied.

SEE OR SEARCH CLASS:

- 139, Textiles: Weaving, for weaving apparatus having unidirectional winding devices for storing a variable number of turns of yarn for supplying weft yarn at high speed to the weaving apparatus.

364.7 Having material accumulation sensor:

This subclass is indented under subclass 364.6. Subject matter including a device that detects the number of turns of material on the support or the presence of a certain number of turns on the support and provides an indication to an operator or controls the winding operation based on the detected condition.

364.8 Senses without material contact:

This subclass is indented under subclass 364.7. Subject matter in which the sensor does not require material contact in order to generate the signal indicating the number of turns present.

364.9 Rotating winding surface:

This subclass is indented under subclass 364.6. Subject matter in which the material support rotates about an axis.

365 Movable material displacement means (e.g., wobble plate):

This subclass is indented under subclass 364.9. Subject matter in which a structure contacting the material on the support and moving relative to it causes or assists in the advancement of material axially (i.e., substantially parallel to the axis of rotation) along the support.

365.1 Material removed axially from winding surface:

This subclass is indented under subclass 364.9. Subject matter in which the material is removed from the support by passing it over an end of the support (i.e., such that the center line of the material removed must lie on the axis of rotation of the support or cross it during unwinding).

- (1) Note. The manner of removal of material is such that the material may be removed even if the support were not rotating.

365.2 Single material strand simultaneously wound into or unwound from plural coils:

This subclass is indented under subclass 364.9. Subject matter in which a single continuous piece of material is wound onto and unwound from plural distinct coils the same time.

- (1) Note. The coils may or may not be located on the same support.

365.3 Stationary winding surface (e.g., with flyer):

This subclass is indented under subclass 364.6. Subject matter in which the material support is stationary during winding and unwinding of material.

365.4 Brake providing resistance to removal of material:

This subclass is indented under subclass 365.3. Subject matter including a device separate from the support or a specially constructed support tending to retain the material on the support, i.e., increasing the tension required to remove material from the support.

365.5 Adjustable drum surface (e.g., variable diameter):

This subclass is indented under subclass 365.3. Subject matter in which the shape or size of the material contacting portion of the support may be changed so that the support may have different shapes during operation.

- (1) Note. The capability of changing the shape or size of the support during operation is not required.

SEE OR SEARCH THIS CLASS, SUBCLASS:

366.1, for a variable diameter winding drum in a unidirectional winding and unwinding device in which the number of windings on the drum is fixed during operation.

365.6 Fixed number of windings on winding surface (e.g., positive feeder):

This subclass is indented under subclass 364. Subject matter constructed so that the number of turns of material on the support cannot vary during normal operation.

- (1) Note. For placement in this subclass there must be structure or corresponding method steps present for maintaining the material in a path on the support such that there is no substantial change in the number of turns on the support. The structure may be a guide. The recitation of a positive material feeder with disclosure of a guide for maintaining the material path is sufficient to warrant placement of the original in this subclass.

- (2) Note. Changes in the number of turns of material on the support during the initial introduction of material onto the support or on removal of material (e.g., after depletion of a material supply) are disregarded.

SEE OR SEARCH CLASS:

66, Textiles: Knitting, for positive yarn feed devices in knitting machines.

365.7 Automatic control or regulation of speed of winding surface:

This subclass is indented under subclass 365.6. Subject matter in which the speed at which material is wound onto the support is maintained or varied by controls responsive to winding conditions without operator intervention.

- (1) Note. Variation in speed during starting or stopping of the winding operation is disregarded even if the starting or stopping is automatically initiated.

365.8 Manually adjustable winding surface speed:

This subclass is indented under subclass 365.6. Subject matter in which the speed at which material is wound and unwound is adjustable by a human operator.

365.9 Manual drive:

This subclass is indented under subclass 365.6. Subject matter in which the power for winding and unwinding is supplied by a human operator.

- the support is shifted along the support.
- 366 Winding drum details:**
This subclass is indented under subclass 365.6. Subject matter including details of the structure of the support for the material.
- 366.1 Variable diameter:**
This subclass is indented under subclass 366. Subject matter in which the support can be adjusted to change its diameter.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
365.5, for an adjustable winding drum in a unidirectional winding and unwinding device in which the number of loops of material on the drum is variable during operation.
- 366.2 Shifting material axially on support:**
This subclass is indented under subclass 364. Subject matter in which the material wound on the support is moved axially relative to the support during operation while remaining on the support.
- (1) Note. Changing the winding point (where the material being wound meets the support or body of wound material) is a different operation than the one provided for in this subclass. See the search notes below.
- (2) Note. For placement in this subclass, there must be structure specifically designed to shift the material. Forcing of wound material axially by mere engagement with newly introduced material is not sufficient in absence of structure to force the new material axially.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
366.3, for a unidirectional winding and unwinding device in which the winding point is systematically changed during winding, (i.e., the material is traversed on the support).
365, for a unidirectional winding and unwinding device having a rotatable support onto which the number of turns of material wound is variable during operation in which material on
- 366.3 Distributing material along the support:**
This subclass is indented under subclass 364. Subject matter including a device or steps for systematically moving the point (i.e., winding point) at which the portion of the material being wound meets the support or body of wound material along the support.
- (1) Note. The movement of the winding point must be in a direction that has a substantial component parallel to the axis about which the material is being wound.
- 366.4 Particular drive:**
This subclass is indented under subclass 364. Subject matter including details of structure or process for supplying or controlling the supply of power for causing the relative rotation of the support and material required for winding the material onto and unwinding the material from the support.
- (1) Note. This subclass takes documents directed to the structure of controls for operating or the drive train for driving a material support (e.g., winding drum) or other material winding mechanism (e.g., orbital winding flyer). The mere recitation of a motor, drive means, or control means is not sufficient to warrant placement here. Sensor details alone are sufficient only when not provided for above. See the search notes below.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
364.7, for a sensor forming part of a winding drive control system in a unidirectional winding and unwinding device.
366.2, for a unidirectional winding and unwinding device including a drive for a drum constructed to shift material axially during operation.
- 370 REELING DEVICE:**
This subclass is indented under the class definition. Apparatus or method capable of repeatedly winding and unwinding an elongated material on a spool or similar support mounted on a frame, usually by power applied by a drive

mechanism, to either rotate a spool or orbit a guide about a stationary spool.

(1) Note. The terms reeling device or reel are used here to denote a device typically including a frame, a spool, and a drive mechanism to cause elongated material to be alternately wound and unwound, not to be confused with reel commonly used to denote the material holder or spool, per se.

(2) Note. An inclusive exception is made for a disclosure of: (a) a particular spool provided with a distinct hand grip that replaces a distinct frame; (b) a frame-supported, stationary spool on which the same material is to be hand wrapped replacing the typical drive mechanism; or (c) a drive mechanism mounted on a frame for winding and unwinding a material in which the inner convolution (e.g., a metal tape) serves in lieu of a distinct spool.

(3) Note. Excluded from this section is a coil holder to which a previously wound coil is introduced for dispensing even though a manual drive may be provided with a drive mechanism such as a crank to rewind a temporary excess of dispensed material.

(4) Note. Reeling apparatus normally provide convenient storage for material in contrast to a winch or hoist that moves or lifts a load attached to the material. However, practical similarities justify an exception wherein convenient storage of material is dominant over accommodation of a possible load as in fishing and seatbelt reels.

SEE OR SEARCH CLASS:

- 4, Baths, Closets, Sinks, and Spittoons, subclass 502 for a reeling device for positioning a specified pool cover.
- 8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclasses 151+ for a reeling device for positioning material with respect to a specified treatment apparatus.

15, Brushing, Scrubbing, and General Cleaning, subclasses 256.5+ for a reeling device combined with a brush or similar structure for cleaning running material as it is wound or unwound.

24, Buckles, Buttons, Clasps, etc., subclasses 3+ for an article holder that may include a reeling component (e.g., to wind and unwind an article tether).

34, Drying and Gas or Vapor Contact With Solids, subclass 117, 118, and 153 for a reeling device for handling strand or web subjected to a Class 34 art process or apparatus.

40, Card, Picture, or Sign Exhibiting, particularly subclass 347, 348, 385+, 470+, 483, 514, 518, and 529 for a reeling device combined with a specific register, file, or changing exhibitor.

43, Fishing, Trapping, and Vermin Destroying, subclass 8, 20, 21, 25, 26.1, 42.28+, and 57.3 for a reeling device combined with apparatus particularly useful in the capture of fish.

160, Flexible or Portable Closure, Partition, or Panel, subclasses 120+, 170+, and 238+ for a reeling device for positioning a specified closure member or similar panel.

239, Fluid Sprinkling, Spraying, and Diffusing, particularly subclass 34, 52, 195+, 736, and 745 for a reeling device combined with a specified fluid coupling to a hose or other conduit.

248, Supports, particularly subclass 75, 266, 329, 330.1, and 492 for a reeling device with a particular supporting structure.

254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclasses 264+ for reeling structure specially constructed or used to haul or hoist a disconnectable load.

362, Illumination, particularly subclass 258, 388, and 407 for a reeling device for an electrical conductor combined with an electrical connector.

441, Buoys, Rafts, and Aquatic Devices, subclasses 23+ for a reeling device used to tether a specified buoy.

- 451, Abrading, subclass 176 for a reeling device used to position a work piece relative to an abrading station.

371 With spring motor:

This subclass is indented under subclass 370. Subject matter wherein the drive mechanism includes a resilient member (spring) adapted to store energy that is selectively released to cause winding or unwinding of the elongated material to or from a coil.

- (1) Note. This and the indented subclasses provide for a reeling device having a spring motor (e.g., a coiled spring or twisted rubber band) serving as the source of power, but not a spring device exclusively used to absorb movement or couple elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 226, and 251 through 254, for a spring-powered drive in a fishing reel.
351, for a nonelectrical motor drive for rewinding and unwinding a machine convertible carrier.

SEE OR SEARCH CLASS:

- 24, Buckles, Buttons, Clasps, etc., subclasses 3+ for an article holder that may include a spring-retracted tether.
33, Geometrical Instruments, particularly subclass 413, 414, 754, and 761+ for a reeling device combined with a specific straight edge cord (chalk line) or flexible distance measuring element (e.g., measuring tape).
76, Metal Tools and Implements, Making, subclass 81.4 for a spring-biased strop retractor in a tool or implement making apparatus or process.
119, Animal Husbandry, subclass 794 and 796 for a reeling device for a specific animal tethering structure (e.g., a dog leash).
160, Flexible or Portable Closure, Partition, or Panel, subclass 245 and 301 through 308 for a spring-powered roller associated with a shiftable closure.
180, Motor Vehicles, subclass 268 and 271+ for a spring reeling device with

a safety belt or harness associated with vehicle structure.

- 182, Fire Escape, Ladder, or Scaffold, subclass 232 and 237 for a reeling device having a spring motor to rewind a specified body harness cable or rope ladder of a fire escape.
185, Motors: Spring, Weight, or Animal Powered, subclass 37, 40, and 43 through 45 for a spring motor of general utility.
244, Aeronautics, subclasses 122+ for a spring-powered reeling device combined with a safety belt or harness in aircraft structure.
254, Implements or Apparatus for Applying Pushing or Pulling Force, subclass 364 for a spring motor combined with a winch or hoist drum.
267, Spring Devices, subclasses 166+ for spring structure detail.
280, Land Vehicles, subclass 290 and 801.1+ for a safety belt or harness reeling device combined with vehicle structure.
297, Chairs and Seats, subclasses 475 through 486 for a restraint belt or harness reeling device combined with seat structure.
362, Illumination, subclass 402 for a lamp support that may be coiled on a spring powered spool.
433, Dentistry, subclass 78 for a retractable hose in a specified dental storage cabinet.

372 Plural springs:

This subclass is indented under subclass 371. Subject matter wherein the spring motor includes two or more resilient members.

373 Spring exhibits special torque characteristic:

This subclass is indented under subclass 371. Subject matter in which particular significance is attributed to the nature of the spring providing the spring motor with either, (a) a predetermined variable torque, or (b) constant torque over a selected operating range.

SEE OR SEARCH CLASS:

- 267, Spring Devices, particularly subclasses 151 through 181 for a detail of a spring, per se, or of general use.

374 With auxiliary force rewinding:
This subclass is indented under subclass 371. Subject matter including an alternative or supplemental power source (e.g., an explosive charge) to cause forced winding of the material.

375 Spring attachment:
This subclass is indented under subclass 371. Subject matter wherein particular significance is attributed to either (a) a support for the spring, or (b) a connection of the spring to the spool, elongated material, or frame.

SEE OR SEARCH CLASS:

185, Motors: Spring, Weight, or Animal Powered, subclass 45 for a mounting feature of a spring motor of general use.

375.1 Spring force adjustment:
This subclass is indented under subclass 375. Subject matter including particular means for presetting the amount of torque exerted by the spring motor prior to winding or unwinding.

SEE OR SEARCH CLASS:

267, Spring Devices, particularly subclass 89 for a detail of a spring adjustment of a spring, per se, or in general use.

375.2 Pretensioned spring attachment:
This subclass is indented under subclass 375. Subject matter in which stress is applied to the spring prior to connecting the spring to the elongated material or the spool for the material.

375.3 With transmission:
This subclass is indented under subclass 375. Subject matter wherein the spring is connected to the spool, elongated material, or frame through rotary force converting means (e.g., gears, belts, chains).

376 Particular spool structure:
This subclass is indented under subclass 371. Subject matter wherein special significance is attributed to the spool that stores the coiled material.

376.1 Particular bearing:
This subclass is indented under subclass 376. Subject matter wherein the spool includes an especially significant element mounting the spool for rotation.

377 Particular guide structure:
This subclass is indented under subclass 371. Subject matter wherein special significance is attributed to structure for directing the elongated material along a selected path.

SEE OR SEARCH THIS CLASS, SUBCLASS:

157, through 157.1, for a guide for longitudinally moving strand.
397, through 397.5, for a guide associated with a reeling device of general utility.
615, through 615.4, for a longitudinally moving material guide.

SEE OR SEARCH CLASS:

226, Advancing Material of Indeterminate Length, may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel driving or reel stopping means, etc.), subclass 196.1 for a passive guide combined with a material feeder.
254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 389+ for a cable guide.

378 Multiple windings:
This subclass is indented under subclass 371. Subject matter wherein distinct coils of elongated material are wound or unwound.

SEE OR SEARCH THIS CLASS, SUBCLASS:

388, and 388.6 through 388.8, for multiple windings on a reeling device of general use.
530+, and 531+, for a winding machine accommodating multiple windings.
603, for a spool with multiple winding surfaces.

378.1 Of centrally gripped material:

This subclass is indented under subclass 378. Subject matter wherein the elongated material is grasped near its longitudinal midpoint by the spool to form plural sections of material that are simultaneously wound or unwound.

- (1) Note. A reel found in this and the indented subclasses winds or unwinds two convolutions of material per spool revolution.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

388.1, through 388.4, for centrally gripped material in a general purpose reel.

SEE OR SEARCH CLASS:

362, Illumination, particularly subclass 258 and 407 for a reeling device for an electrical conductor combined with an electrical connector.

378.2 End segment anchored:

This subclass is indented under subclass 378.1. Subject matter wherein an end of one of the sections of material remote from the spool is fixed.

- (1) Note. A reel found in this subclass typically moves toward an anchored end of the material during winding and has utility as a yieldable slack take-up device (e.g., for an electrical cord or leash).

378.3 Material supported spool:

This subclass is indented under subclass 378.2. Subject matter wherein the spool is borne by the anchored material.

378.4 On independent spools:

This subclass is indented under subclass 378. Subject matter wherein separately rotatable drums are provided for supporting the plurality of distinct coils.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

388.6, through 388.8, for plural spools in a general use reel.

379 Particular frame or frame carrier:

This subclass is indented under subclass 371. Subject matter wherein special significance is attributed to either (a) a housing for the spool, or (b) a structure for supporting a spool housing.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

310, through 321, for a frame for a fishing reel.

398+, for a frame or frame-mounting feature of a general use reel.

379.1 Energy or stress absorption structure:

This subclass is indented under subclass 379. Subject matter wherein the frame or carrier is specifically constructed to transfer force in the elongated material to the frame with minimized distortion of associated components.

379.2 Frame carrier feature:

This subclass is indented under subclass 379. Subject matter wherein special significance is attributed to support structure for carrying the frame.

380 Material irregularity (e.g., knot) engageable with stop:

This subclass is indented under subclass 371. Subject matter wherein the elongated material is provided with an enlargement, knot, or other modification that is adapted to engage a stationary portion of the frame (e.g., a guide) to limit winding or unwinding.

381 Yieldable brake (e.g., friction or fluid):

This subclass is indented under subclass 371. Subject matter including a device to significantly retard rotation of the spool or material during winding or unwinding.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

285+, for a fishing reel brake.

396, 396.5, and 396.9, for a brake of a general purpose reel.

SEE OR SEARCH CLASS:

33, Geometrical Instruments, particularly subclass 413, 414, 754, and 761+ for a reeling device combined with a specific straight edge cord (chalk line) or

- flexible distance measuring element (e.g., measuring tape).
- 188, Brakes, appropriate subclasses for brakes, their operators, and similar component in general use.
- 254, Implements or Apparatus for Applying Pushing or Pulling Force, subclass 375, 377, and 378 for a brake for a winch drum.
- 381.1 Material engaging:**
This subclass is indented under subclass 381. Subject matter wherein the brake includes a portion engageable with the elongated material (e.g., along an uncoiled length of the material) for retarding winding or unwinding.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
396.5, for a material engaging brake in a general purpose reel.
- 381.2 Engages wound material:**
This subclass is indented under subclass 381.1. Subject matter wherein the material engaging brake portion is engageable with the coiled material.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
292, through 294, for a fishing reel brake.
396.6+, for a spool or coil engaging brake in a general purpose reeling device.
422.5+, for a coil engaging brake in general winding or unwinding use.
- 381.3 Manually operated:**
This subclass is indented under subclass 381.1. Subject matter wherein the brake includes an actuator portion actuated by pressure exerted by a user for applying a retarding force on the material.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
291, through 294, for a manually applied fishing reel brake.
396.5+, for a manually applied brake in a general utility reel.
- 381.4 Tension responsive:**
This subclass is indented under subclass 381.1. Subject matter comprising a device for sensing a degree of slackness in the elongated material, which device actuates the brake.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
287, for a tension responsive, fishing reel brake.
419.1, 421.8, and 421.9, for a material tension sensitive brake of general utility.
- 381.5 Centrifugal:**
This subclass is indented under subclass 381. Subject matter wherein the brake is responsive to a radial force generated as the result of rotation of the spool about an axis.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
289, for a centrifugal fishing reel brake.
- SEE OR SEARCH CLASS:
254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclass 267 for a speed control for a hoist drum.
- 381.6 Manually operated:**
This subclass is indented under subclass 381. Subject matter in which the brake includes an actuator adapted to be directly engaged by a user.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
291, through 294, for a manually applied fishing reel brake.
396.5, 396.7+, and 396.9, for a user-applied brake in a general purpose reel.
- 382 Lock against spool unwinding:**
This subclass is indented under subclass 371. Subject matter including a positive brake (lock) adapted to prevent rotation of the spool in at least an unwinding direction.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
297, through 300, for a positive brake in a fishing reel.

396.1, through 396.4, for a positive brake in a general purpose reel.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, subclasses 575+ for pawl and ratchet structure in general use.
- 180, Motor Vehicles, subclasses 268+ for a reeling device for a seatbelt or occupant harness under the control of a motor vehicle part (e.g., an ignition switch).
- 188, Brakes, subclasses 82.1+ for a one-way brake of general use.
- 200, Electricity: Circuit Makers and Breakers, subclasses 61.45+ and 61.58 for a seatbelt responsive maker/breaker.
- 244, Aeronautics, subclass 122 for a reeling device for a seatbelt of a specified aeronautic device.
- 254, Implements or Apparatus for Applying a Pushing or Pulling Force, subclass 310, 357, and 376 for a positive one-way brake for a winch or hoist drum.
- 280, Land Vehicles, subclass 290 and 801.1+ for a reeling device to store a seat well or body harness in combination with specified land vehicle structure.
- 297, Chairs and Seats, particularly subclasses 475+ for a reeling device for a seatbelt or other restraint incorporated with specified seat structure.

382.1 Material responsive (e.g., automatic lock):

This subclass is indented under subclass 382. Subject matter in which the unwinding lock includes an actuator operated in response to the completion of a predetermined cycle of material unwinding, which cycle may be a set time period, a length of unwound material, change in direction of spool movement, termination of unwinding, or similar condition, but excludes actuation responsive to unwinding speed or acceleration, per se.

- (1) Note. Typically these devices permit initial unwinding (e.g., for seatbelt placement) that completes the unwinding cycle and actuates the unwinding lock.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 286, through 289, for a fishing reel brake responsive to unwinding line, and 413+, 418.1+, 419+, and 421.1+, for a material-responsive tension control in a winding or unwinding apparatus.

SEE OR SEARCH CLASS:

- 254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclasses 270 through 276 for a hoist drum control actuated in response to a cable or cable associated structure.

382.2 Convertible to emergency locking:

This subclass is indented under subclass 382.1. Subject matter wherein the unwinding lock further includes an alternate actuator operable in response to an extreme, usually hazardous condition.

382.3 Time delay:

This subclass is indented under subclass 382.1. Subject matter wherein the predetermined cycle is established by means providing a set interval of disablement of the unwinding lock, which means may be a conventional elapsed timer, counter, or other device that repetitively operates over a short, constant time span.

382.4 Predetermined length of material unwound:

This subclass is indented under subclass 382.1. Subject matter in which the predetermined cycle is established by means disabling the unwinding lock until a set length of material is unwound.

SEE OR SEARCH CLASS:

- 254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclass 276 for a hoist drum having a control actuated in response to a number of drum rotations.

382.5 Alternately engaged locking pawls:

This subclass is indented under subclass 382. Subject matter in which the positive brake includes plural blocking lugs (pawls), one or the other of which can be actuated to prevent unwinding.

382.6 Shiftable spool body:

Subject matter under 382 comprising structure mounting the spool for displacement to effect locking.

SEE OR SEARCH CLASS:

254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclass 268 for a hoist control responsive to shifting of the cable drum.

383 Material speed responsive (e.g., belt sensitive):

This subclass is indented under subclass 382. Subject matter in which the unwinding lock is associated with an actuator responsive to an undesired change in velocity of the material (e.g., seatbelt) being unwound from the spool.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclasses 61.45+ for a circuit maker/breaker specially designed to be responsive to acceleration, inertia, tilting, or the like.

383.1 With lock prevention or sensitivity reduction:

This subclass is indented under subclass 383. Subject matter including means for either (a) temporarily disabling, or (b) reducing the responsiveness of the unwinding lock.

383.2 Inertia operator:

This subclass is indented under subclass 383. Subject matter wherein the actuator for the unwinding lock includes a mass adapted to provide particular sensitivity to acceleration, which mass actuates the unwinding lock in response to undesired changes in the unwinding velocity of the material.

383.3 Axially movable lock:

This subclass is indented under subclass 383.2. Subject matter in which the unwinding lock includes a braking member (e.g., a slidable pawl) shiftable in a direction substantially parallel to the axis of the spool to prevent unwinding.

383.4 Frame mounted locking pawl:

This subclass is indented under subclass 383.2. wherein the unwinding lock includes a blocking lug or dog adapted to cooperate with structure movable with the spool to prevent or limit unwinding.

383.5 Opposed pawls on spool:

This subclass is indented under subclass 383.2. Subject matter wherein the unwinding lock includes lugs (pawls) supported at arcuately spaced points on the spool.

384 Frame movement responsive (e.g., vehicle sensitive):

This subclass is indented under subclass 382. Subject matter wherein the unwinding lock includes an actuator that senses a condition of the frame (e.g., orientation or movement) for applying the unwinding lock.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclasses 61.45+ for a circuit maker/breaker specially designed to be responsive to acceleration, inertia, tilting, or the like.

254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclass 286 for a hoist drum having a control actuated in response to relative movement between hoist components.

280, Land Vehicles, subclass 290 and 801.1+ for a safety belt or harness reeling device associated with particular vehicle structure.

384.1 With lock prevention or sensitivity reduction:

This subclass is indented under subclass 384. Subject matter including means for either (a) temporarily disabling, or (b) reducing the responsiveness of the unwinding lock.

384.2 With pilot pawl:

This subclass is indented under subclass 384. Subject matter wherein the unwinding lock includes a shiftable positioning link (pawl) for guiding the unwinding lock into a locking position.

384.3 Axially movable lock member:

This subclass is indented under subclass 384. Subject matter wherein a portion of the unwinding lock is mounted for movement in a direction parallel to the axis of the spool during movement of the unwinding lock from an unlocked position to the spool locking position.

384.4 Multiply positionable operator:

This subclass is indented under subclass 384. Subject matter including means for selectively varying the orientation of the unwinding lock actuator.

384.5 Pendulum operator:

This subclass is indented under subclass 384. Subject matter wherein the actuator of the unwinding lock is a mass eccentrically mounted with respect to its center of gravity to be extremely sensitive to the orientation or acceleration of the frame for applying the unwinding lock.

384.6 Ball operator:

This subclass is indented under subclass 384. Subject matter wherein the actuator includes a spherical member adapted to roll in response to a change in orientation or speed of the frame to apply the unwinding lock.

384.7 Manually operated:

This subclass is indented under subclass 382. Subject matter wherein the unwinding lock includes an actuator adapted to be directly engaged by a user.

SEE OR SEARCH THIS CLASS, SUBCLASS:

291, through 294, for a manually applied fishing reel brake.

396.5, and 396.7 through 396.8, for a user-applied brake in a general purpose reel.

385 Lock against spool winding:

This subclass is indented under subclass 371. Subject matter including a positive brake (lock) adapted to selectively prevent rotation of the spool in the winding direction.

(1) Note. A winding lock is usually applied after a desired length of the elongated

material is unwound to prevent premature rewinding.

SEE OR SEARCH CLASS:

188, Brakes, subclasses 82.1+, for one-way brakes of general use.

385.1 Material movement responsive (e.g., window shade type):

This subclass is indented under subclass 385. Subject matter wherein the winding lock includes an actuator operated in response to either (a) movement of the material, or (b) rotation of the spool, to shift the winding lock between active and inactive positions.

385.2 With additional lock release:

This subclass is indented under subclass 385.1. Subject matter comprising a supplemental actuator for shifting the winding lock to an inactive position.

385.3 Movable locking pawl on frame:

This subclass is indented under subclass 385.1. Subject matter wherein the winding lock includes a blocking lug or dog mounted on the frame and releasably engageable with structure movable with the spool to prevent or limit winding.

385.4 Manually operated:

This subclass is indented under subclass 385. Subject matter in which the winding lock includes an actuator adapted to be directly engaged by a user.

SEE OR SEARCH CLASS:

33, Geometrical Instruments, particularly subclass 413, 414, 754, and 761+ for a reeling device combined with a specific straight edge cord (chalk line) or flexible distance measuring element (e.g., measuring tape).

386 With orbital wrapping guide:

This subclass is indented under subclass 370. Subject matter wherein the drive mechanism rotates a material directing member about the spool to coil the elongated material onto or into a normally stationary spool.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 224+, for a fishing reel that frequently employs an orbital wrapping guide.
 405.1, and 405.2, for a hand-held, hand-wrapped reel.
- 387 Axial unwinding:**
 This subclass is indented under subclass 370. Subject matter wherein the elongated material is uncoiled over an end of the spool.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 128, for axial unwinding from a spool.
 224, through 248, for axial unwinding in a fishing reel.
 593, for axial unwinding from a spool holder.
- SEE OR SEARCH CLASS:
 57, Textiles: Spinning, Twisting, and Twining, for axial unwinding for applying a twist to strand.
- 388 Multiple windings:**
 This subclass is indented under subclass 370. Subject matter wherein discrete elongated materials or distinct segments of a single elongated material are wound onto one or more spools commonly supported on the frame.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 378+, for a spring reel for multiple windings.
- 388.1 Of centrally gripped material:**
 This subclass is indented under subclass 388. Subject matter wherein the elongated material is grasped near its longitudinal midpoint by the spool to form plural segments of material that are simultaneously wound or unwound.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 378+, for multiple winding segments wound onto a spool powered by a spring motor.
- SEE OR SEARCH CLASS:
 137, Fluid Handling, subclass 355.16 for a reeling device for a hose combined
- with a specified connection between a fluid supply and a hose.
- 362, Illumination, subclass 258 and 407**
 for a reeling device for an electrical conductor combined with means providing an electrical connection.
- 388.2 With material snagging lock (e.g., midline tightener):**
 This subclass is indented under subclass 388.1. Subject matter wherein the reeling device includes a stationary catch to grasp the elongated material to prevent uncoiling.
- (1) Note. A midline tightener typically uses a spool positioned over a center portion on wire whose ends are fixed so that rotation of the spool winds from the center toward fixed ends to tension the wire for removing sag, which tightener requires means (e.g., a wire engaging hook or bridge) to prevent backward rotation of the entire device and thereby loss of tension.
- SEE OR SEARCH CLASS:
 211, Supports: Racks, subclass 119.15 for a clothesline tightener associated with a clothesline pole.
 254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 213+ for a rotated drum used in a stretching tool disengageable from the material being stretched.
- 388.3 With unidirectional brake:**
 This subclass is indented under subclass 388.2. Subject matter wherein the reeling device includes a one-way mechanism (e.g., a pawl and ratchet) permitting winding rotation of the spool while preventing reverse rotation of the spool.
- SEE OR SEARCH CLASS:
 74, Machine Element or Mechanism, subclasses 575+ for a pawl and ratchet of general use.
 188, Brakes, subclasses 82.1+ for a one-way brake of general use.

388.4 With integrated crank:

This subclass is indented under subclass 388.2. Subject matter wherein the reeling device includes an elongated handle member permanently joined to the spool for rotating the spool.

388.5 With mounting frame:

This subclass is indented under subclass 388.1. Subject matter wherein the spool is carried by a stationary fundamental support toward which ends of the elongated material are drawn during winding.

388.6 Plural spools or spool portions:

This subclass is indented under subclass 388. Subject matter wherein the reeling device includes multiple spools or distinct spool sections, each for receiving a separate elongated material.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

378.4, for multiple take-ups in a spring-powered reeling device.

530+, for multiple take-ups on a convolute winding machine.

SEE OR SEARCH CLASS:

254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclasses 278+ for a hoist with multiple winding drums or drum sections.

388.7 Alternatively driven:

This subclass is indented under subclass 388.6. Subject matter wherein the drive mechanism is capable of rotating a single one of the plurality of spools or spool sections at a time.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

531+, for alternately driven take-ups in a convolute winding machine.

388.8 Single power source (e.g., clutched spools):

This subclass is indented under subclass 388.7. Subject matter wherein the drive mechanism includes a single power source selectively connectable to an individual spool or spool section by a torque transmitting coupling.

388.9 Material stored in loops or variable-size coils:

This subclass is indented under subclass 370. Subject matter in which the material is stored in the form of one or more coils or loops whose size is variable to dispense from storage or retract the material back into storage.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

364.11, for a winding apparatus or method in which material is simultaneously wrapped and unwrapped from plural supports.

SEE OR SEARCH CLASS:

226, Advancing Material of Indeterminate Length, subclass 119 for a device for advancing indeterminate length material and directing it into loops of varying size for temporary storage.

388.91 Plural coils:

This subclass is indented under subclass 388.9. Subject matter in which the form in which the material is stored is a plurality of loops of material in which the material turns through 360 degrees and the beginning and ending points of the loops are in close proximity.

389 With particular drive (e.g., ratchet drive, motor driven):

This subclass is indented under subclass 370. Subject matter wherein special significance is attributed to the drive mechanism for causing the elongated material to be wound or unwound.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

249+, for a drive mechanism in a fishing reel.

349+, 540, and 564, for a particular drive in other winding or unwinding devices.

SEE OR SEARCH CLASS:

40, Card, Picture, or Sign Exhibiting, subclass 386 and 518+ for a particular drive for a reeling device combined with a specific register or changing exhibitor.

74, Machine Element or Mechanism, for a transmission detail of general use.

- 192, Clutches and Power-Stop Control, for a detail of a clutch or stop control in a transmission of general use.
- 254, Implements or Apparatus for Applying Pushing or Pulling Force, for a particular drive in a winch or hoist.

390 **Motor powered:**

This subclass is indented under subclass 389. Subject matter wherein the drive mechanism includes means to convert potential energy into kinetic energy (motor).

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 225, and 250, for a motor-powered fishing reel.
- 540+, for a winding machine with a particular drive that may include a motor.

SEE OR SEARCH CLASS:

- 40, Card, Picture, or Sign Exhibiting, subclasses 470+ for a motor-operated reeling device combined with a specific register or changing exhibitor.
- 254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 266+, particularly subclasses 339 through 373 for a motor-driven drum of a winch or hoist.
- 343, Communications: Radio Wave Antennas, subclass 877 and 903 for a particular antenna adapted to be wound.

390.1 **With material length stop:**

This subclass is indented under subclass 390. Subject matter comprising motor control means sensitive to the amount of material wound on or unwound from the spool to interrupt winding or unwinding.

- (1) Note. The control means may include either a direct length measuring device or an indirect measuring device such as a turn counter or object carried by the elongated material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 534.2, for a length-responsive stop in a winding machine.
- 563.2, for an unwinding machine with a length-responsive detector or stop.

- 564.1+, for an unwinding machine with a limited interval drive.

SEE OR SEARCH CLASS:

- 33, Geometrical Instruments, subclasses 713+, 734, 754, and 761+, for a sounding device or a flexible measuring tape reel.
- 192, Clutches and Power-Stop Control, subclass 125 for a material control stop, per se, or in general use.
- 200, Electricity: Circuit Makers and Breakers, subclasses 61.13+ for a circuit maker/breaker specially designed for operation by a running web or strand, spool, or guide.
- 254, Implements or Apparatus for Applying Pushing or Pulling Force, subclass 269 and 276 for a brake or drive control device responsive to the length of wound or unwound line of a winch.
- 324, Electricity: Measuring and Testing, subclasses 207.11+ for length of material measurement, per se, or in other combinations.

390.2 **For unwinding:**

This subclass is indented under subclass 390. Subject matter wherein the motor can be actuated to cause uncoiling of the material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 564+, for an unwinding machine with a drive means.

SEE OR SEARCH CLASS:

- 343, Communications: Radio Wave Antennas, subclass 877 and 903 for a particular wound antenna.

390.3 **With coil constrainer:**

This subclass is indented under subclass 390.2. Subject matter wherein the spool includes or is associated with means to restrain wound convolutions of the elongated material from shifting away from the spool.

- (1) Note. A coil constrainer typically retains convolutions of material tightly against a spool that might otherwise spring away from the spool.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 547, for a pressure element engaged with a coil of convolute material during winding.
- 580, and 580.1, for a coil holder with means to retain the outer end of wound, elongated material.

390.4 Weight:

This subclass is indented under subclass 390. Subject matter wherein the drive mechanism includes significant mass associated with or made a part of the spool to assist in winding the elongated material.

SEE OR SEARCH CLASS:

- 185, Motors: Spring, Weight, or Animal Powered, subclasses 27+ for a detail of a weight motor, per se, or in general use.

390.5 Fluid:

This subclass is indented under subclass 390. Subject matter wherein the motor uses either hydraulic or pneumatic pressure to rotate the spool.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 351, for a nonelectric drive for winding or unwinding a machine-convertible carrier.

SEE OR SEARCH CLASS:

- 254, Implements or Apparatus for Applying Pushing or Pulling Force, subclass 291 and 361 for a fluid motor drive for the drum of a winch.

390.6 With speed or torque control:

This subclass is indented under subclass 390.5. Subject matter wherein particular significance is attributed to a means for regulating the rate of winding or unwinding or power produced by the fluid motor.

SEE OR SEARCH CLASS:

- 254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclass 267, 274, and 275 for a speed or torque regulator in a winch of hoist drive.

- 318, Electricity: Motive Power Systems, for a motor control of general use.

390.7 Vehicle motor (e.g., power take-off):

This subclass is indented under subclass 390. Subject matter wherein a land, air, or water conveyance derives its locomotive power from a motor that also rotates the spool or orbits a wrapping guide either directly or via a power take-off transmission.

- (1) Note. This subclass excludes vehicle supported reeling devices in which either: (a) the spool is driven by traction (e.g., ground-driven or a ground-driven wheel), or (b) the spool is related to the vehicle solely by being fixed to a vehicle supporting wheel.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, particularly subclasses 13 through 15 for a wheel-powered take-off device of general use.
- 180, Motor Vehicles, subclass 7.5 for a vehicle-mounted winch on a tow truck.
- 254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclass 282 and 328 for a hoist drum mounted on a vehicle and rotated by the motor of the vehicle.

390.8 Electric:

This subclass is indented under subclass 390. Subject matter wherein the motor is powered by electrodynamic force.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 250, for an electric motor used to drive a fishing reel spool.

SEE OR SEARCH CLASS:

- 254, Implements or Apparatus for Applying Pushing or Pulling Force, subclass 292 and 362 for an electric motor used to drive the drum of a winch.
- 310, Electrical Generator or Motor Structure, for electrical motor structure of general use.

390.9 With speed or torque control:

This subclass is indented under subclass 390.8. Subject matter wherein particular significance is attributed to a means for (a) regulating the rate of winding or unwinding or (b) power produced by the electric motor.

SEE OR SEARCH CLASS:

318, Electricity: Motive Power Systems, for an electric motor control of general use.

391 Traction driven spool (e.g., ground engaging):

This subclass is indented under subclass 389. Subject matter wherein the drive mechanism includes force transmitting structure (e.g., a flange connected to the spool) engageable with a generally planar surface, including a floor, ground, wall, rail, or water, for inducing rotation of the spool as a result of locomotion of the reeling device along the surface.

SEE OR SEARCH CLASS:

111, Planting, subclass 44 and 45 for a reeling device used to actuate a planting drill seeder at selected intervals.
254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclasses 279+ and 323+ for a drum drive in a hoist or winch.

391.1 Spool shiftable clear of traction surface:

This subclass is indented under subclass 391. Subject matter wherein the spool is movable from a position of driving engagement with the surface to a position disengaged from the surface (e.g., to permit unwinding).

391.2 With spool drive transmission:

This subclass is indented under subclass 391. Subject matter wherein the force transmitting structure includes a mechanism for converting rotation of a traction input into rotation of the spool that is modified as to speed, direction, or axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:

349, for a particular drive in a winding machine.
564, for a particular drive in an unwinding machine.

391.3 Belt or chain:

This subclass is indented under subclass 391.2. Subject matter wherein the mechanism converting rotation includes an flexible, endless force transferring element to rotate the spool.

SEE OR SEARCH THIS CLASS, SUBCLASS:

352.4+, and 356.7, for a belt drive in a machine-convertible system.
541.3, for a belt drive in a winding machine.

392 Spool on vehicle wheel or axle:

This subclass is indented under subclass 389. Subject matter wherein the drive mechanism includes means for attaching the spool for rotation with an axle, hub, tire, or tire support of a conveyance typically to aid in extracting the conveyance from an undesired location.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, particularly subclasses 13 through 15 for a wheel power take-off device of general use.

393 Peripherally driven spool:

This subclass is indented under subclass 389. Subject matter wherein the spool or material wound onto the spool provides an outer circumferential surface to which torque is applied by the force transmitting structure to rotate the spool.

SEE OR SEARCH THIS CLASS, SUBCLASS:

541+, for a surface-driven coil in a winding machine.
564.5, for a coil-engaging drive in an unwinding machine.

SEE OR SEARCH CLASS:

111, Planting, subclass 44 and 45 for a peripherally driven reeling device adapted to actuate a seeder (i.e., a check row planter).

394 Releasable spool drive (e.g., clutched spool):

This subclass is indented under subclass 389. Subject matter wherein the drive mechanism includes an input means selectively connectable to the spool by a torque transmitting coupling.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 257+, for a clutched fishing reel drive.
- 545, for a clutched winding machine drive.

SEE OR SEARCH CLASS:

- 40, Card, Picture, or Sign Exhibiting, subclass 519, 521, and 523 for a clutched drive in a reeling device for a particular changing exhibitor.
- 192, Clutches and Power-Stop Control, appropriate subclasses for clutches, clutch-brakes, and power-stop controls as a subcombination or in general use.
- 254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclass 345, 346+, 355+, and 365+ for a clutched drive for the drum of a winch or hoist.

394.1 Limited torque (e.g., slip coupling):

This subclass is indented under subclass 394. Subject matter wherein the torque transmitting coupling transfers rotation to the spool by a friction connection that can yield when encountering resistance to rotation beyond a predetermined amount.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 264, for a slip drive in a fishing reel.
- 356.5, for a friction drive in a machine-convertible information system.
- 545.1, for a slip drive in a winding machine drive.

395 Manually rotatable crank or wheel:

This subclass is indented under subclass 389. Subject matter wherein the force transmitting structure includes an input element adapted to be engaged and rotated by a user's hand or finger.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 282, through 284, for a particular crank in a fishing reel.
- 350, for a manual drive in a machine convertible information system.
- 546.1, for a manual drive in a winding machine.

- 564.2, for a manual drive in an unwinding machine.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, subclasses 543+ for a handle in a generalized combination and subcombination.

395.1 Foldable spool drive crank:

This subclass is indented under subclass 395. Subject matter wherein the input element includes an elongated member with an offset manual grip, which member includes a hinged or similarly formed portion pivotally mounting the input element for movement from an operating position to a retracted, storage position.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 284, for a collapsible handle in a fishing reel.

396 With brake:

This subclass is indented under subclass 370. Subject matter comprising a retarding device for arresting or preventing rotation of the spool or winding member.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 156+, for a brake associated with a strand winding device.
- 422.1+, for a brake for a winding or unwinding device.

SEE OR SEARCH CLASS:

- 182, Fire Escape, Ladder, or Scaffold, subclasses 73+ and 231+ for a reeling device with a brake designed to retard unwinding of a specified body harness or rope ladder.
- 188, Brakes, appropriate subclasses for a brake, brake operator, or similar component as a subcombination and of generalized use.
- 254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclasses 375+ for a brake in a load hoist or winch device.

396.1 Positive:

This subclass is indented under subclass 396. Subject matter wherein the retarding device prevents rotation of the spool or winding member in at least one direction.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 297+, for a positive brake in a fishing reel.
- 382+, and 385+, for a positive brake in a spring powered reel.
- 395.1, for a spool lock in the form of a handle rotatable with the spool and foldable to intersect a stationary frame part.
- 410, for a positive brake for a winding or unwinding machine.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, subclasses 575+ for pawl and ratchet structure as a subcombination and in combination with generalized structure.
- 188, Brakes, subclasses 82.1+ for a one-way brake of general use.
- 254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclass 356 and 376 for a brake for a hoist or winch drum.

396.2 One-way:

This subclass is indented under subclass 396.1. Subject matter wherein the retarding device prevents rotation of the spool or winding member in one direction while permitting rotation thereof in the opposite direction.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 298+, for a one-way brake in a fishing reel.

SEE OR SEARCH CLASS:

- 402, Binder Device Releasably Engaging Aperture or Notch of Sheet, subclass 10 for a reeling device for applying tension to a pliant sheet retainer (e.g., a strap).

396.3 Reversible:

This subclass is indented under subclass 396.2. Subject matter wherein the retarding device is shiftable to an alternate position to permit rota-

tion in the first named direction and prevent rotation in the second direction.

396.4 Ratchet and radial pawl:

This subclass is indented under subclass 396.2. Subject matter wherein the retarding device comprises a blocking element and a toothed element, one fixed to the frame and the other being rotatable with the drive mechanism, which elements are of a dimension and shape to permit the elements to pass each other when the drive is rotated in one direction but which abut in a manner to prevent rotation in the opposite direction.

396.5 Friction:

This subclass is indented under subclass 396. Subject matter wherein the retarding device is adapted to contact and rub against an element induced to move as a consequence of unwinding of the elongated material, which element may be the spool, winding member, the elongated material, or structure movable with these elements.

- (1) Note. This subclass serves to collect friction brakes applied to a running material, rotatable wrapping guide, or transmission structure remote from a spool.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 243+, and 285+, for a brake in a fishing reel.
- 381+, for a yieldable brake in a spring-powered reeling device.
- 421+, for a brake used in a winding or unwinding machine or to tension running material.

396.6 Applied to coil or spool (e.g., radial):

This subclass is indented under subclass 396.5. Subject matter wherein the retarding device includes a retarding member adapted to be applied to: (a) wound material, (b) structure directly supporting the wound material, or (c) structure closely associated with and directly rotating coaxially with the wound material.

SEE OR SEARCH CLASS:

- 33, Geometrical Instruments, particularly subclass 413, 414, 754, and 761+ for a reeling device combined with a specific straight edge cord (chalk line) or

flexible distance measuring element
(e.g., measuring tape).

396.7 User pressure application:

This subclass is indented under subclass 396.6. Subject matter wherein the retarding device includes an actuator shifted by force applied by an operator of the reeling device at any given instant to increase the resistance to unwinding rotation as long as the force is applied.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

291, through 294, for a manually applied brake in a fishing reel.
381.6, for a manually applied brake in a spring-powered reel.

396.8 Radially applied:

This subclass is indented under subclass 396.7. Subject matter wherein the retarding device is applied in a direction at a substantial angle (e.g., 45° to 135°) from the axis about which the material is wound.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

301, for a radially applied brake in a fishing reel.
422.4+, for a radially applied, yieldable brake in a winding or unwinding machine.

396.9 Axially applied:

This subclass is indented under subclass 396.6. Subject matter wherein the retarding device is applied in a direction substantially parallel (i.e., from 0° to 44°) to the axis about which the material is wound.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

302+, for an axially applied brake in a fishing reel.
423+, for an axially applied brake in a winding or unwinding machine.

SEE OR SEARCH CLASS:

188, Brakes, subclasses 71.1+ for an axially applied brake, per se, or in general use.

397

With particular guide or guard:

This subclass is indented under subclass 370. Subject matter wherein the reeling device includes a means for directing, confining, or moving the elongated material along a desired path to or from the spool.

- (1) Note. A guide directs the elongated material by normally maintaining continued contact or influence (e.g., magnetic or fluid reaction) on the elongated material while a guard may limit movement of errant material without normally contacting the material.
- (2) Note. A guide designed to provide significant resistance to material movement is treated as a tensioner or brake.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

157+, for a guide for strand material.
548+, for a guide or guard combined with a winding machine.
566, for a guide or guard combined with an unwinding machine.
615+, for a guide or guard for running material.

SEE OR SEARCH CLASS:

254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclasses 389+ for a guide adapted to direct a line of a load hoist or winch.
492, Roll or Rollers, for a guide of general use.

397.1 Guide boom or tube:

This subclass is indented under subclass 397. Subject matter wherein the means for directing the material includes an elongated unit to direct the material for a substantial length.

- (1) Note. This subclass provides for an elongated guide commonly in the form of a tube or a plurality of guides commonly mounted and jointly defining an elongated path, but excludes a collection of plural, independent guides.

SEE OR SEARCH CLASS:

43, Fishing, Trapping, and Vermin Destroying, subclass 26.1 for a reeling device with a tubular guide combined with apparatus for directing a separate fishing line (e.g., a downrigger).

397.2 Shiftably mounted guide (e.g., material distributor):

This subclass is indented under subclass 397. Subject matter wherein the means for directing material includes a guide movable on the frame between discrete positions.

- (1) Note. This subclass collects guides for either evenly distributing material or simply shiftable between two discrete positions (e.g., operative and storage modes).

SEE OR SEARCH THIS CLASS, SUBCLASS:

476.7+, for a device for distributing material during winding.

397.3 Driven shifting device (e.g., cam, crank, or screw):

This subclass is indented under subclass 397.2. Subject matter wherein the drive mechanism is connected with means for moving the guide to distribute the elongated material as the drive mechanism causes the material to be wound onto the spool.

SEE OR SEARCH THIS CLASS, SUBCLASS:

241+, for a spinning-type fishing reel with a line distributing device.
273, and 277 through 281, for a fishing reel with a mechanically operated guide to distribute material onto a rotating spool.
476.7+, for a device for distributing elongated material on the take-up of a helical winding apparatus.

397.4 Manually operated:

This subclass is indented under subclass 397.2. Subject matter wherein the means for directing the material includes a portion providing direct engagement by a hand or finger of the user for shifting of the guide during winding.

SEE OR SEARCH THIS CLASS, SUBCLASS:

241+, and 276, for a manually shifted line guide for a fishing reel.

397.5 Rotary guide:

This subclass is indented under subclass 397. Subject matter wherein the means for directing the material is mounted to revolve about an axis.

398 With particular frame or frame carrier:

This subclass is indented under subclass 370. Subject matter wherein special significance is attributed to either: (a) the frame of the reeling device or, (b) a structure (carrier) for mounting the reeling device on a support.

SEE OR SEARCH CLASS:

4, Baths, Closets, Sinks, and Spittoons, for a reeling device for positioning a pool cover.
114, Ships, subclass 254 for a line storage reel for a towing cable in ship structure.
119, Animal Husbandry, subclass 794 and 796 for a reel device combined with a specific animal tethering structure (e.g., dog leash).
137, Fluid Handling, subclass 355.16 for a hose reel combined with a specified connection between a fluid supply and a hose.

399 Plural spool positions:

This subclass is indented under subclass 398. Subject matter wherein the frame includes structure for either: (a) supporting the spool in alternative positions within the frame, or (b) for supporting the frame for movement from one to another position on the carrier.

SEE OR SEARCH THIS CLASS, SUBCLASS:

391.1, for a spool shiftable between traction drive and nondrive positions (e.g., between ground-engaging and elevated positions).
591+, for a coil holder adapted for use in plural positions.

399.1 With discrete actuator:

This subclass is indented under subclass 399. Subject matter comprising a distinct operating device for shifting the spool relative to the spool frame or carrier (e.g., to regulate distribution of the material being wound, or to align the spool with a desired winding path, etc.).

399.2 Arcuately displaced positions:

This subclass is indented under subclass 399. Subject matter wherein the structure supporting the frame accommodates the frame or spool in any of a plurality of positions displaced from each other substantially along a curve (e.g., to permit the spool to align itself in different planes of winding or unwinding).

SEE OR SEARCH THIS CLASS, SUBCLASS:

591, and 592, for a repositionable coil holder.

SEE OR SEARCH CLASS:

119, Animal Husbandry, subclass 794 and 796 for a reeling device for positioning a specified animal tether.

400 Combined with nonreel device:

This subclass is indented under subclass 398. Subject matter wherein the reeling device is either: (a) an ancillary component supported on an article of manufacture to store an elongated wound member associated with the article of manufacture (e.g., an electric or fluid conductor of a portable appliance or tool), or (b) consolidated with an ancillary article of manufacture (e.g., a storage facility incorporated in the frame).

SEE OR SEARCH THIS CLASS, SUBCLASS:

905, for a storage chamber with a winding, unwinding, or reeling device.

SEE OR SEARCH CLASS:

4, Baths, Closets, Sinks, and Spittoons, subclass 502 for a reeling device for a pool cover.

43, Fishing, Trapping, and Vermin Destroying, subclass 8, 20, 21, 25, 26.1, 42.28+, and 57.3 for a reeling device possibly combined with various fishing implements.

60, Power Plants, subclass 905 for a power plant with an ancillary winding or reeling device.

137, Fluid Handling, subclass 355.16 for a hose spool with a fluid coupling for the hose.

191, Electricity: Transmission to Vehicles, subclass 12.2 for a spool having an electrically conductive connection with a wound conductor.

239, Fluid Sprinkling, Spraying, and Diffusing, subclass 195 for a fluid coupling between a reeling device and fluid conductor.

362, Illumination, particularly subclass 258, 387, and 407 for a reeling device for an electrical conductor combined with a light source.

401, Coating Implements With Material Supply, particularly subclass 13 for a specific writing implement combined with a paper dispenser.

433, Dentistry, subclass 78 for a retractable hose in a specified dental storage cabinet.

400.1 Hand wrapped:

This subclass is indented under subclass 400. Subject matter wherein the elongated material is adapted to be grasped by the user to be wound or unwound by orbiting the user's hand about a stationary spool.

401 Collapsible or knockdown:

This subclass is indented under subclass 398. Subject matter wherein components of the frame or carrier are connected together by means for either: (a) shiftably mounting, or (b) separably connecting the components with respect to each other for readily reducing at least one spatial dimension of the reeling device.

402 With material segment retainer:

This subclass is indented under subclass 398. Subject matter wherein the frame includes significant structure to grip or otherwise retain: (a) a portion of the elongated material, or (b) an object carried by the elongated material.

SEE OR SEARCH CLASS:

43, Fishing, Trapping, and Vermin Destroying, subclass 57.3 for a reel combined with a trotline (long line

carrying depending drop lines, each with a fish hook at its free end).

403 Mobile carrier:

This subclass is indented under subclass 398. Subject matter wherein the carrier includes means (e.g., wheels or skids) for facilitating arbitrary movement of the reeling device from one location to another.

SEE OR SEARCH THIS CLASS, SUBCLASS:

390.7, and 391 through 391.3, for a vehicle-mounted reel with either motor or traction drive for the spool or winder.
557, for a mobile unwinding station.

SEE OR SEARCH CLASS:

280, Land Vehicles, particularly subclasses 47.131+ for details of a hand truck or wheelbarrow of general use.

403.1 Single primary axle (e.g., hand cart):

This subclass is indented under subclass 403. Subject matter wherein the carrier has one or more wheels or runners offset toward one end of the frame so that the frame may be tilted upward to otherwise clear the frame from static surface contact for locomotion by a human or draft animal (e.g., a wheelbarrow, hand truck, or pony cart).

404 Releasable mounting (e.g., separable fastener):

This subclass is indented under subclass 398. Subject matter wherein the frame is readily removable from the carrier by the provision of retainer means formed as either, (a) a special coupling formation (e.g., a bayonet, keyhole, or threaded joint), or (b) a special connector (e.g., a threaded fastener or band).

404.1 Flexible strap or harness:

This subclass is indented under subclass 404. Subject matter wherein the retaining means is either (a) a flaccid band, cord, or similar element, or (b) an assembly of these elements for releasably retaining the frame on its carrier, which carrier may be the user.

SEE OR SEARCH CLASS:

224, Package and Article Carriers, subclass 162 for a carrier of an article that may be a spool.

294, Handling: Hand and Hoist-Line Implements, subclasses 137+ for a hand carrier of general use.

404.2 Clamp (e.g., C-clamp):

This subclass is indented under subclass 404. Subject matter wherein the retaining means includes shiftably related parts forming a disengageable pressure fit between the frame and its carrier.

404.3 Hook, ring, or hanger:

This subclass is indented under subclass 404. Subject matter wherein the retaining means includes a connector (e.g., a crook, clasp, safety pin, hasp, or grommet) formed with a curvilinear or offset portion by which the frame is releasably suspended from the carrier.

405 Hand carried:

This subclass is indented under subclass 398. Subject matter wherein the reeling device is portable, and either: (a) sized to fit in the user's hand, or (b) provided with a special manual grip or handle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

588.1+, for a hand- or body-carried coil holder.

SEE OR SEARCH CLASS:

33, Geometrical Instruments, particularly subclass 413, 414, 754, and 761+ for a reeling device used in combination with a specific straight line or distance determination (e.g., a reel for a chalk line or measuring tape).

74, Machine Element or Mechanism, particularly subclasses 543+ for a handle of general use.

119, Animal Husbandry, subclass 794 and 796 for a reeling device for a specified animal tether.

224, Package and Article Carriers, subclass 162 for an article carrier of general use adapted to be manually supported.

294, Handling: Hand and Hoist-Line Implements, particularly subclasses 137+ for a hand-held article carrier.

405.1 Hand wrapped:

This subclass is indented under subclass 405. Subject matter wherein the elongated material is wound about the spool by the user grasping the material and orbiting the material and spool relative to each other.

405.2 With distinct handle:

This subclass is indented under subclass 405.1. Subject matter wherein the frame is provided with a portion particularly configured to provide a convenient point for the user to grasp and support the reeling device.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclasses 543+ for a handle in generalized combination or subcombination.

405.3 With distinct handle:

This subclass is indented under subclass 405. Subject matter wherein the frame is provided with a portion particularly configured to provide a convenient point for the user to grasp and support the reeling device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

588.2, for a coil holder with a hand grip.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclasses 543+ for a handle in generalized combination or subcombination.

406 With special base or mounting member (e.g., attachment socket or stake):

This subclass is indented under subclass 398. Subject matter wherein the frame includes a special supporting foundation, bracing, or staking for at least semi-permanently positioning the reeling device on a carrier surface (e.g., a floor, ground, wall, rail).

- (1) Note. Typically found here are bases that rely on gravity or a mounting fastener such as a nailed bracket or a ground stake.

SEE OR SEARCH CLASS:

312, Supports: Cabinet Structure, particularly subclass 34.6 and 34.8 for a cabinet adapted for use with rolled material.

407 With particular spool:

This subclass is indented under subclass 370. Subject matter wherein special significance is attributed to the line holder (spool) of the reeling device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

118+, for a strand spool.
322, for a particular spool in a fishing reel.
600+, for a spool, per se, or in general use.

SEE OR SEARCH CLASS:

84, Music, subclasses 122+, 133, and 150 for a music roll spool combined with a drive or tracking board peculiar to a musical instrument or subcombination.
114, Ships, subclass 254 for a line storage reeling device of a specified ship.
187, Elevator, Industrial Lift Truck, or Stationary Lift for Vehicle, subclasses 254+ for a winding or traction drum in combination with elevator structure.
254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclass 374 for an irregularly shaped drum for a hoist or winch.

407.1 Collapsible or knockdown:

This subclass is indented under subclass 407. Subject matter wherein components of the spool are connected together by means for either: (a) shiftably mounting, or (b) separably connecting the components with respect to each other, for readily reducing at least one spatial dimension of the spool.

SEE OR SEARCH THIS CLASS, SUBCLASS:

127, for a skein holder that may be collapsible.
529, for a winding device having means to contract or expand a spool or other coil holder during winding.

- 571+, for a device adapting a coil holder including a spool to be collapsed or expanded.
- 607+, for a spool with a releasable joint that may permit convenient disassembly.

410 TENSION CONTROL OR BRAKE:

This subclass is indented under the class definition. Apparatus or corresponding method for either: (a) regulating the longitudinal stress (tension) in an indefinite length of running material, or (b) retarding or selectively stopping rotation of a coiled material.

- (1) Note. Stress regulation includes longitudinal tension added or subtracted by: (a) retardation or drag added to a supply, (b) adjusting supply and take-up rates to maintain tension within desired limits, or (c) temporarily storing material in a reserve formation during an abundance of supply or shortage of demand.
- (2) Note. Stress regulation as used here excludes: (a) incidental tensioning created by contact of moving material with a static element such as a guide unless the element is explicitly provided to create tension (e.g., by special surface, tortuous course, etc.), (b) braking incidental to a specified manufacturing or materials handling operation such as splicing, cutting, stamping, reciprocal feeding, etc., (c) a brake applied to the material for the purpose of completely halting movement, or (d) a device to create appreciable lasting tension in an article (e.g., prestressed concrete, pressure vessel, etc.).
- (3) Note. This subclass is the locus for a positive brake applied to a spool or other coil holder of a winding or unwinding device not specifically provided for earlier in this schedule.
- (4) Note. Where a tensioner is claimed with no significant structure but merely in terms of the composition of material of which it is composed, the tensioner will be classified as a brake subcombination or in the appropriate composition or material class.

SEE OR SEARCH CLASS:

- 28, Textiles: Manufacturing, subclass 194 for tensioning threads being wound onto a warp beam (elongated take-up).
- 29, Metal Working, subclass 452 for tensioning material in a manufacturing operation.
- 66, Textiles: Knitting, particularly subclass 126, 130, 146, 151, and 158 for a strand tensioner in a specified knitting process or apparatus.
- 74, Machine Element or Mechanism, subclasses 575+ for pawl and ratchet structure as a subcombination or in combination with generalized structure.
- 87, Textiles: Braiding, Netting, and Lace Making, subclass 61 for a tension device combined with a braiding or related machine.
- 112, Sewing, subclass 254 and 255 for a tensioner combined with a specific sewing process or apparatus.
- 118, Coating Apparatus, subclass 33 for a tensioner combined with material coating means.
- 139, Textiles: Weaving, subclass 200, 201, and 212+ for a tensioning means associated with a weft supply apparatus.
- 188, Brakes, appropriate subclasses for general purpose braking, particularly subclasses 64 through 65.1 for strand brakes capable of halting strand movement.
- 192, Clutches and Power-Stop Control, for devices regulating the transfer of drive power in various applications.
- 200, Electricity: Circuit Makers and Breakers, subclasses 61.13+ for a circuit maker/breaker specially designed for operation by a running web or strand, spool, or guide.
- 226, Advancing Material of Indeterminate Length, particularly subclasses 37+ and 195 for a tensioner combined with a feeder that may include a nominal material coil.
- 250, Radiant Energy, for a detail of a photoelectric device, per se, or in combination with generalized structure, particularly subclasses 200+ and 559.01.

- 254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclasses 267 through 277 for a tension control in a winch or hoist.
- 303, Fluid-Pressure and Analogous Brake Systems, for general purpose retarding devices associated with a fluid pressure regulator.
- 318, Electricity: Motive Power Systems, appropriate subclasses, especially subclass 6, 7, and 362+ for tensioning and brakes of various uses.
- 411 Cyclic material reserve (e.g., irregularly shaped take-up):**
This subclass is indented under subclass 410. Subject matter comprising a mechanism to create and release a reserve length of the elongated material during each: (a) rotation of a winding member or take-up, or (b) material demand stroke of an ancillary machine.
- 412 Take-up coil drive control:**
This subclass is indented under subclass 410. Subject matter comprising a tension regulating system acting on a winding coil.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
331+, 333+, and 334+, for a drive control for an information-bearing carrier.
- 412.1 With supply control:**
This subclass is indented under subclass 412. Subject matter wherein the tension regulating system acts on both the winding coil and a delivery device (e.g., a supply coil).
- 412.2 Plural condition sensors (e.g., slack loop sensors):**
This subclass is indented under subclass 412.1. Subject matter wherein the tension regulating system includes multiple detecting elements.
- 412.3 Diverse (e.g., slack loop and diameter sensors):**
This subclass is indented under subclass 412.2. Subject matter wherein the tension regulating system includes dissimilar detecting elements.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
333.1, and 334.2, for diverse sensors for controlling an information-bearing carrier.
- 413 With material condition sensor:**
This subclass is indented under subclass 412. Subject matter wherein the tension regulating system includes a detector actuated in response to a physical state of the elongated material.
- 413.1 Plural sensors:**
This subclass is indented under subclass 413. Subject matter wherein the tension regulating system includes multiple detectors.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
333.1, and 334.2+, for plural sensors that control an information-bearing carrier.
- 413.2 Coil diameter responsive sensor:**
This subclass is indented under subclass 413. Subject matter wherein the detector acts in response to a change in the radial dimension of wound material as measured from an axis of rotation of the winding coil.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
333.5, and 334.5, for a coil diameter sensor for a machine convertible information carrier.
421.2, for a coil diameter sensor used in a supply coil brake control.
- SEE OR SEARCH CLASS:
200, Electricity: Circuit Makers and Breakers, subclass 61.15 for a switch designed to be actuated in response to a quantity of wound material.
- 413.3 Slackness sensor (e.g., photocell or load cell):**
This subclass is indented under subclass 413. Subject matter wherein the elongated material is wound onto the roll and is adapted to move along a desired path, and the detector responds to undesired deviation of the material from that path.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

331.2+, 333.3+, and 334.6, for a material engaging sensor used to control an information-bearing carrier.

418.1, 419.1, 420.6, and 421.5+, for a slackness sensor in various material supply devices.

SEE OR SEARCH CLASS:

254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclasses 272+ for a cable-deflected control for regulating winding in a winch or hoist.

413.4 With power control circuit:

This subclass is indented under subclass 413.3. Subject matter wherein the winding coil is driven by a prime mover at a rate proportional to the energy supplied through a metering network included in the stress regulating device.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

390.6, for a power controller of a fluid motor in a reeling device.

413.5 Electrical:

This subclass is indented under subclass 413.4. Subject matter wherein the metering network regulates electrodynamic energy.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

390.9, for a power controller of an electric motor in a reeling device.

413.6 Switch actuated:

This subclass is indented under subclass 413.5. Subject matter wherein the energy metering network includes current contacts made conductive or nonconductive in response to the detector.

413.7 Transmission control:

This subclass is indented under subclass 413.3. Subject matter wherein the winding coil is driven by a prime mover acting through a mechanical motion transfer mechanism (e.g., drive chain or gearing), which mechanism is under the control of the tension regulating system.

413.8 Yieldable drive (e.g., clutch or slip coupling):

This subclass is indented under subclass 413.7. Subject matter wherein the mechanical motion transfer mechanism includes means to either (a) effectively separate (clutch), or (b) alter torque transfer ability (coupling), of elements of the motion transfer mechanism, which means is under the control of the tension regulating system.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

264+, for a yieldable drive for a fishing reel.
356.5+, for a friction drive for winding a machine convertible carrier.

394+, for a clutch or coupling in the drive of a reeling device.

413.9 Speed of running material sensor:

This subclass is indented under subclass 413. Subject matter wherein the detector measures the rate of movement of the elongated material to be wound for regulating the winding rate.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

334.4, for a tachometer-type sensor for control of the speed or torque in a winding device for an information-convertible carrier.

414 Power control circuit (e.g., fluid regulating network):

This subclass is indented under subclass 412. Subject matter wherein the winding coil includes a prime mover operated at a rate determined by the amount of energy supplied, and the tension regulating system includes means to adjust the supplied energy.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

334+, for a speed or torque control in a winder of an information-bearing carrier.

390.6, for a speed or torque control in a reeling device.

414.1 Electrical circuit:

This subclass is indented under subclass 414. Subject matter wherein the adjusting means includes a system of electron conductors to adjust the energy supplied to the prime mover.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

390.9, for a control for regulating electrical power to a motor in a reeling device.

SEE OR SEARCH CLASS:

318, Electricity: Motive Power Systems, appropriate subclasses, especially subclass 6, 7, and 362+ for tensioning means or brake of general use.

415 Transmission control:

This subclass is indented under subclass 412. Subject matter wherein the winding roll includes a prime mover connected to the winding coil by a mechanical motion transfer mechanism (e.g., drive chain or gearing), which mechanism is under the control of the tension regulating system.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

334+, for a speed or torque control for winding an information-bearing carrier.

415.1 Yieldable drive (e.g., clutch or slip coupling):

This subclass is indented under subclass 415. Subject matter wherein the mechanical motion transfer mechanism includes a means to either: (a) effectively separate, or (b) alter torque transfer ability of elements of the motion transfer mechanism.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

257+, and 264+, for a releasable drive in a fishing reel.

356.5+, for a friction drive in a drive for an information-bearing carrier.

394+, for a releasable spool drive in a reeling device.

416 Supply controlled:

This subclass is indented under subclass 410. Subject matter wherein the apparatus for regulating tension includes either a tension control

system or retarding device acting on an elongated material source in the form of: (a) a delivery coil, (b) a feeder associated with a coil, (c) fabricating equipment, or (d) other generalized delivery means.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

334+, for a speed or tension control for winding an information-bearing carrier.

SEE OR SEARCH CLASS:

192, Clutches and Power-Stop Control, subclass 125 for a material control stop, per se, or of general use.

417 Reserve loop former:

This subclass is indented under subclass 416. Subject matter wherein the apparatus includes a mechanism to create a low inertia surplus of material available during short intervals of above normal demand to avoid excessive stress in the material.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

331+, for an intermediate storage device for an information-bearing carrier.

552, and 554+, for an intermediate storage device that may be created as a temporary material source to compensate for irregular supply rates accompanying a change of supply.

SEE OR SEARCH CLASS:

226, Advancing Material of Indeterminate Length, may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel-driving or reel-stopping means, etc.); subclass 97.2 for fluid current material moving means and means to store a web; subclasses 104+ for festooning apparatus; or subclasses 118.1+ for intermediate storage means between plural material moving means.

417.1 Pneumatic:

This subclass is indented under subclass 417. Subject matter wherein the mechanism for creating a low inertia supply utilizes positive or negative air pressure.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

331.3, for a pneumatic control of a low inertia loop supply of information-bearing carrier.

417.2 Plural loops:

This subclass is indented under subclass 417. Subject matter wherein the mechanism for creating a low inertia supply includes means for forming multiple reserve formations of material.

417.3 Yieldable loop former:

This subclass is indented under subclass 417. Subject matter wherein the mechanism for creating a low inertia supply includes structure lightly biased in one direction against the material to form a material surplus formation (loop), but shiftable in an opposite direction to relinquish the surplus as tension in the material increases.

418 Feeder associated with coil:

This subclass is indented under subclass 416. Subject matter wherein the elongated material source includes a powered material advancing means (feeder) associated with a coil, which means is under control of the tension control system.

SEE OR SEARCH CLASS:

226, Advancing Material of Indeterminate Length, appropriate subclasses for a tensioner or brake associated with a particular material feeding device.

418.1 Slackness sensor:

This subclass is indented under subclass 418. Subject matter wherein the material is adapted to be advanced along a path by the feeder at a rate to establish a desired level of material tension that is reflected by a degree of gravitational or similar sag of an unsupported portion of the material, and the tension control system includes a detector actuated in response to deviation of the material from an acceptable

degree of sag to adjust the rate of advancement by the feeder to thereby reestablish the desired tension.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

413.3+, for a slack sensor used in regulating a take-up coil drive.

419.1, for a slack sensor used in regulating the drag developed by a guide.

420.3, for a slack sensor used in regulating a peripheral drive for a supply roll.

420.6, for a slack sensor used in regulating an electrical control circuit of a supply coil drive.

421.5+, for a slack sensor used in regulating a supply coil brake.

419 Drag on running material:

This subclass is indented under subclass 416. Subject matter wherein the apparatus for regulating tension in the elongated material includes mean to apply a retarding force against linearly advancing material.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

147+, for a strand engaging tensioner.

SEE OR SEARCH CLASS:

188, Brakes, subclass 65.1 for a strand engaging brake adapted to completely halt strand movement.

419.1 Slackness sensor:

This subclass is indented under subclass 419. Subject matter wherein the elongated material moves along a desired path subject to a degree of gravitational or similar sag proportional to the stress in the material, and the tension control system includes means to apply a retarding force against the running material in response to a detector actuated in response to deviation of the material from the desired path.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

413.3+, for a slack sensor used in regulating a take-up coil drive.

418.1, for a slack sensor used in regulating the drag developed by a feeder.

420.3, for a slack sensor used in regulating a peripheral drive for a supply roll.

420.6, for a slack sensor used in regulating an electrical control circuit of a supply coil drive.

421.5, for a slack sensor used in regulating a supply coil brake.

419.2 Coil diameter sensor:

This subclass is indented under subclass 419. Subject matter wherein the means to apply a retarding force against the running material is regulated in response to a detector actuated by a change in the radial dimension of a roll of material.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

334.5, for a coil diameter sensor for regulating the speed or tension in an information-bearing carrier.

413.2, for a take-up coil diameter sensor for regulating the tension being wound onto the coil.

421.2, for a supply coil diameter sensor for regulating a supply coil brake.

419.3 Pneumatic or magnetic:

This subclass is indented under subclass 419. Subject matter wherein the apparatus for regulating tension in the elongated material utilizes either: (a) positive or negative air pressure, or (b) magnetic flux.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

147, for an air pressure tensioning means for a strand.

150, for a magnetic operator for a disk brake acting against a strand.

419.4 Clamping:

This subclass is indented under subclass 419. Subject matter wherein the apparatus for regulating tension in the elongated material includes shiftably related parts between which the running material is adapted to be squeezed to apply a retarding force.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

149, for a clamp to apply tension to a strand.

SEE OR SEARCH CLASS:

139, Textiles: Weaving, subclass 216 and 217 for a spring clamp brake element engaging weft material moving to a specified weaving station.

419.5 Rotary (e.g., pinch pair rollers):

This subclass is indented under subclass 419.4. Subject matter wherein at least one guide is a roller or ball.

419.6 Successive:

This subclass is indented under subclass 419. Subject matter wherein the apparatus for regulating tension in the elongated material includes multiple directing elements or guides acting on the running material at distinct points spaced along the path of the material.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

153+, for tortuous course tensioning means for strand.

SEE OR SEARCH CLASS:

139, Textiles: Weaving, subclass 214 and 215 for successive brake elements engaging weft material on its way to a weaving apparatus.

419.7 Shiftable (e.g., variable tortuous course):

This subclass is indented under subclass 419.6. Subject matter wherein one of the successive guides is shiftable to vary the extent of contact between the running material and guide to vary the retarding force against the running material.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

154, for an adjustable tortuous course tensioning means for strand.

419.8 Rotary:

This subclass is indented under subclass 419. Subject matter wherein the apparatus for regulating tension in the elongated material includes a material directing element or guide capable of turning about its axis.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

155+, for a rotary wheel or pulley for tensioning strand.

419.9 With brake or clutch:

This subclass is indented under subclass 419.8. Subject matter wherein the material directing element or guide is associated with a retarding device (brake) or releasable coupling (clutch) by which an overall retarding force applied to the running material can be controlled.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

156+, for a brake for retarding strand.

SEE OR SEARCH CLASS:

188, Brakes, appropriate subclasses for a brake, per se, or of general use.

192, Clutches and Power-Stop Control, appropriate subclasses for a clutch, clutch-brake, or power-stop control as a subcombination or of general use.

420 Supply coil drive control:

This subclass is indented under subclass 416. Subject matter wherein the elongated material source is a delivery coil adapted to be rotated by a mechanism at an adjustable rate determined by the tension regulating system.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

331, and 334, for a tension or speed control for an information carrier.

538.1, for a coordinated drive for a supply and take-up of a convolute winding machine.

564, for a drive for unwinding from a supply coil.

420.1 Peripheral drive:

This subclass is indented under subclass 420. Subject matter wherein the delivery coil rotating mechanism includes means engaging and rotating an outer perimeter of the delivery coil.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

541+, for a peripheral drive of a convolute winding machine.

420.2 Belt:

This subclass is indented under subclass 420.1. Subject matter wherein the delivery coil rotating mechanism includes a flexible, closed loop drive member engageable with the outer circumference of the delivery coil for rotating the coil in an unwinding direction.

420.3 Slackness sensor:

This subclass is indented under subclass 420.2. Subject matter wherein the drive member is associated with a detector responsive to the degree of gravitational or similar sag in the material being unwound from the delivery coil, which detector is a material stress information input component of the tension regulating system.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

413.3+, for a slack sensor used in regulating a take-up coil drive.

418.1, for a slack sensor used in regulating the drag developed by a feeder.

419.1, for a slack sensor used in regulating a drag on a running length of material.

420.6, for a slack sensor used in regulating an electrical control circuit of a supply coil drive.

421.5, for a slack sensor used in regulating a supply coil brake.

SEE OR SEARCH CLASS:

254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclasses 272+ for a cable-deflected control for regulating winding in a winch or hoist.

420.4 Clutch:

This subclass is indented under subclass 420. Subject matter wherein the mechanism for rotating the supply coil includes a coupling disposed between a prime mover and the supply coil, which coupling can interrupt or transfer rotation between the prime mover and supply coil under control of the tension regulating system.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

413.7+, for a transmission control that may include a clutch or coupling for con-

trolling tension in a material being wound onto a coil take-up.

420.5 Electrical control circuit:

This subclass is indented under subclass 420. Subject matter wherein the supply coil is rotated by a prime mover at a rate proportional to the amount of electrodynamic energy supplied to the prime mover as determined by an energy regulating network.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

414.1, for an electrical control circuit for regulating a material take-up.

SEE OR SEARCH CLASS:

318, Electricity: Motive Power Systems, appropriate subclasses, especially subclass 6, 7, and 362+ for tensioning and brakes of various uses.

420.6 Slackness sensor:

This subclass is indented under subclass 420.5. Subject matter wherein the energy regulating network is adjusted by a detector responsive to the degree of sag or stress in the elongated material being unwound from the supply coil.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

413.3+, for a slack sensor used in regulating a take-up coil drive.

418.1, for a slack sensor used in regulating the drag created by a material feeder.

419.1, for a slack sensor used in regulating the drag developed by a guide.

420.3, for a slack sensor used in regulating a peripheral drive for a supply roll.

421.5, for a slack sensor used in regulating a supply coil brake.

SEE OR SEARCH CLASS:

254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclasses 272+ for a cable-deflected control for regulating winding in a winch or hoist.

421 Supply coil brake control:

This subclass is indented under subclass 416. Subject matter wherein particular significance is attributed to a tension regulating system for

adjusting a retarding device applied to a delivery coil.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

285, for a brake in a fishing reel.

331.5, for a brake for an information-bearing carrier.

396, for a brake in a reeling device.

419.9, for a brake acting on a rotary material guide for regulating tension in the material.

SEE OR SEARCH CLASS:

139, Textiles: Weaving, subclasses 218+ for friction means to retard weft material moving toward a specified weaving station.

188, Brakes, appropriate subclasses for a brake, brake operator, or similar component as a subcombination and of generalized use.

421.1 Plural sensors:

This subclass is indented under subclass 421. Subject matter comprising multiple detectors serving as information input components of the tension regulating system.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

333.1, and 334.2+, for plural sensors for controlling an information-bearing carrier.

413.1, for plural sensors acting for controlling a material take-up.

421.2 Coil diameter sensor:

This subclass is indented under subclass 421. Subject matter comprising a detector responsive to changes in the radial dimension of a coil, which detector serves as a material condition information input component of the tension regulating system.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

333.5, and 334.5, for a coil diameter sensor for regulating an information-bearing carrier.

413.2, for a coil diameter sensor for regulating tension in a take-up coil drive

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclass 61.15 for a switch designed to be actuated in response to a quantity of wound material.

421.3 Coil weight sensor:

This subclass is indented under subclass 421. Subject matter comprising a detector responsive to changes in the mass of a coil, which detector serves as a material condition information input component of the tension regulating system.

SEE OR SEARCH THIS CLASS, SUBCLASS:

334.5, for a coil weight sensor for regulating an information-bearing carrier.

421.4 Speed, torque, or revolutions sensor:

This subclass is indented under subclass 421. Subject matter comprising a detector responsive to one of: (a) the rate of movement of the material or coil, (b) the force exerted to wind or unwind material, or (c) the number of turns of a roll of material or rotatable indicator associated with the material or roll, which detector serves as a material condition input component of the tension regulating system.

SEE OR SEARCH THIS CLASS, SUBCLASS:

334+, for means to control the speed or tension of an information-bearing carrier.
413.9, for a material speed detector in a tension regulating system for a take-up coil.

421.5 Slackness sensor:

This subclass is indented under subclass 421. Subject matter wherein the tension regulating system includes a detector responsive to changes in gravitational sag or similar deviation of material from a desired path as the material unwinds from the delivery coil, which detector serves as a material stress information input component.

SEE OR SEARCH THIS CLASS, SUBCLASS:

413.3+, for a slack sensor used in regulating a take-up coil drive.

417.3, for a slack sensor used in regulating a drag on a running length of material.

418.1, for a slack sensor used in regulating the drag developed by a feeder.

420.3, for a slack sensor used in regulating tension in a belt drive for a supply coil.

420.6, for a slack sensor used in regulating an electrical control circuit of a supply coil drive.

421.6 With power control circuit:

This subclass is indented under subclass 421.5. Subject matter wherein the retarding device is adjusted at a rate proportional to energy supplied through a regulating network under the influence of the slackness sensor.

421.7 Electrical:

This subclass is indented under subclass 421.6. Subject matter wherein the energy regulating network controls electrodynamic energy supplied to the retarding device.

SEE OR SEARCH CLASS:

318, Electricity: Motive Power Systems, for a control device for an electrical device including a motor or brake of general use, particularly subclass 6, 7, and 362+.

421.8 Mechanically applied brake:

This subclass is indented under subclass 421.5. Subject matter wherein the tension regulating system includes machine linkage to transfer motion from an input to the supply coil retarding device.

SEE OR SEARCH CLASS:

254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclasses 272+ for a cable-deflected control for regulating winding in a winch or hoist.

421.9 Compound leverage mechanism:

This subclass is indented under subclass 421.8. Subject matter wherein the machine linkage includes successive pivoted linking elements providing mechanical or distance advantage between the input and retarding device.

422 Yieldable coil brake:

This subclass is indented under subclass 416. Subject matter wherein the retarding device includes a particular braking member shiftable into engagement with the delivery coil or reactive structure rotatable with the coil for establishing a desired resistance value to unwinding.

SEE OR SEARCH CLASS:

254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclasses 375+ for a brake for the drum of winch or hoist.

422.1 Plural:

This subclass is indented under subclass 422. Subject matter wherein multiple brake members are provided.

422.2 Fluid or magnetic brake or operator:

This subclass is indented under subclass 422. Subject matter wherein the brake member or an associated actuator relies on either: (a) liquid or gaseous pressure, or (b) a metallic component subject to a magnetic flux, to retard rotation of the delivery coil.

SEE OR SEARCH CLASS:

254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclass 377 for a fluid resistance brake associated with the drum of a hoist or winch.

422.3 Electrical operator:

This subclass is indented under subclass 422. Subject matter wherein the brake member is shifted by an actuator under the influence of electrodynamic energy.

SEE OR SEARCH CLASS:

188, Brakes, subclasses 161+ for an electrical brake operator of general use.

422.4 Radially applied:

This subclass is indented under subclass 422. Subject matter wherein the brake member is adapted to be shifted in a direction substantially perpendicular to a center axis of the delivery coil.

SEE OR SEARCH CLASS:

188, Brakes, subclasses 74+ for a radially applied brake, per se, or of general use.

422.5 Wound material engaging:

This subclass is indented under subclass 422.4. Subject matter wherein the brake member is adapted to contact the elongated material wound on the supply coil.

422.6 Strap:

This subclass is indented under subclass 422.5. Subject matter wherein the brake member is an elongated member exhibiting enough flexibility when applied to conform in part to the outline of the material wound on the supply coil.

SEE OR SEARCH CLASS:

188, Brakes, subclasses 77+ for a radially acting strap-type brake, per se, or of general use.

422.7 Accommodates roll transfer:

This subclass is indented under subclass 422.6. Subject matter wherein the brake member is specifically designed to accommodate relocation of the supply coil (e.g., during replacement as a supply coil is transported to a position against the brake strap).

422.8 Strap:

This subclass is indented under subclass 422.4. Subject matter wherein the brake member is an elongated member exhibiting enough flexibility when applied to conform in part to the outline of the reactive structure rotatable with the coiled material (e.g. a spool flange or drum).

SEE OR SEARCH CLASS:

188, Brakes, subclasses 77+ for a radially acting strap-type brake, per se, or of general use.

422.9 Opposed:

This subclass is indented under subclass 422.4. Subject matter wherein the brake member includes retarding elements adapted to engage oppositely facing sections of the reactive structure (e.g., opposite ends of a spool, spool flange, brake disc, or drum).

SEE OR SEARCH CLASS:

188, Brakes, subclass 75 and 76 for opposed brakes, per se, or of general use.

423 Axially applied:

This subclass is indented under subclass 422. Subject matter wherein the brake member is adapted to be applied along a path substantially parallel to a center axis of the delivery coil.

SEE OR SEARCH CLASS:

188, Brakes, subclasses 71.1+ for an axially applied brake, per se, or of general use.

423.1 Coaxial with coil:

This subclass is indented under subclass 423. Subject matter wherein the brake member is adapted to be applied along a path coincident with a center axis of the delivery coil.

423.2 Opposed:

This subclass is indented under subclass 423.1. Subject matter comprising a pair of brake members disposed at opposite ends of the spool or a spool connected component, one of the members being shiftable toward and away from the other to establish a desired resistance value.

430 COMPOSITE ARTICLE WINDING:

This subclass is indented under the class definition. Apparatus or method for either (a) winding an elongated material directly onto a core to form a permanent product of manufacture comprising a core and one or more permanently retained coils or (b) one of a group of selected components of such a winding apparatus or method not provided for elsewhere and whose utility is peculiar to use in a winder as defined in item (a), which component is limited to a work holder, a material tensioner, guide or guard, a shuttle, or a machine frame.

- (1) Note. This subclass and the subclasses indented hereunder provide for winding a product of manufacture in which the elongated material is wound on and, by disclosure, remains as a distinct coil in intimate contact with a core so long as the core remains with the winding apparatus. Article winding provided for here

is distinct from (a) a storage package winding whose material is to be subsequently unwound or otherwise removed from the core, provided for elsewhere in this class; (b) winding with additional component or product modification (e.g., shaping, twisting, bonding, coating or nonwinding assembly) provided for in other manufacturing classes; or (c) wrapping components together or on an indefinite length core to form a textile strand, wire rope, or similar product provided in a textile class.

- (2) Note. Guidelines for placement of an original patent directed to a winder or winding method with features appropriate to production of either an article or storage package and certain subcombinations within Class 242 is as follows: (a) a winder or subcombination appropriate to winding a storage package as well as an article can be properly placed as a storage package winder, which generally provides a more comprehensive breakdown, if the specific article is unclaimed and winding a storage package is considered to be a clear alternative (e.g., a winder distributing wire in layers on a core useful as a storage coil as well as an inductance coil); (b) a claimed work holder, material tensioner, guide or guard, or a frame subcombination, is properly placed with the appropriate article winder if the subcombination is peculiar to a provided article winder (i.e., not readily used for a package winder and not having general utility). Some examples proper for article winders are: (i) a tensioner for stressing a pipe, vessel, or other core rather than stressing the material for proper winding; and (ii) a holder, guide, or guard asymmetrically related to the coil to be wound in a manner invariably related to winding a slotted article, such as a ring or spheroid.

SEE OR SEARCH CLASS:

- 29, Metal Working, subclass 33, 596+, 605, 618, 732+, and 779+ for winding an article that includes an additional nonwinding operation (e.g., shaping, assembly, or disassembly).

- 57, Textiles: Spinning, Twisting, and Twining, subclasses 3+ for winding to form a strand or wire rope, or winding with twisting or untwisting.
- 72, Metal Deforming, particularly subclasses 49+, 67+, and 127+ for winding or forming an elongated material into a coil by use of a bending device to stress the material beyond its elastic limit.
- 74, Machine Element or Mechanism, subclasses 20 through 109 for a mechanical movement of general application.
- 140, Wireworking, particularly subclass 34, 47, 71.5, 92.1, 92.2, and 124 for producing an article that includes winding wire disclosed as being bent beyond its elastic limit, most frequently evidenced by transfer of coiled wire relative to a mandrel on which it is wound.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, particularly subclasses 51+, 143+, 160+, 169+, 184+, 422, 425+, 443+, and 460 for winding combined with an adhesive bonding operation.
- 431 Controlled by an electrical property of article:**
This subclass is indented under subclass 430. Subject matter comprising a winding mechanism having comparing means (e.g., a Wheatstone bridge) which compares an electrical value of an article being wound to a reference value for the purpose of issuing an alarm or terminating or otherwise regulating winding when the article being wound exhibits either (a) a desired electrical value or (b) a value out of acceptable tolerance.
- SEE OR SEARCH CLASS:
- 324, Electricity: Measuring and Testing, particularly subclasses 76.11+, 546 through 549, and 600+ for comparative test circuitry.
- 336, Inductor Devices, particularly subclass 15 for an inductor adjustable by the winding or unwinding of the inductor coil.
- 432 On internally toothed core (e.g., motor stator):**
This subclass is indented under subclass 430. Subject matter wherein the core on which material is wound is provided with a central opening into which at least one projection extends to define a tooth or pole piece and comprising a winding mechanism by which the elongated material is wound about the projection for more than 360 degrees.
- SEE OR SEARCH CLASS:
- 29, Metal Working, particularly subclass 596 and 732+ for motor stator winding combined with a nonwinding manufacturing step or apparatus.
- 74, Machine Element or Mechanism, appropriate subclasses for particular details of a mechanical movement used to control the placement of a winding.
- 140, Wireworking, subclass 92.1 and 92.2 for winding a stator coil on a form for subsequent transfer of either a coil convolution or the entire coil to a core.
- 310, Electrical Generator or Motor Structure, subclasses 254+ for a particular detail of a stator core, end turn support, or particular inductance pattern expressed as steps of a method appropriate to the act of winding by hand as well as machine winding.
- 432.1 By endless, flexible shuttle:**
This subclass is indented under subclass 432. Subject matter wherein the winding mechanism includes a loop-shaped, pliant, winding member (e.g., a belt, wire, garter, or chain) supported in the central opening of the core for rotation in an orbital path about the projection so that elongated material attached to the winding member is wrapped onto the projection.
- (1) Note. The flexible shuttle may be formed by simply bonding a section of the elongated material upon itself to form a closed loop which is driven to pull a further length of the material about the projection.

432.2 By compound movement mechanism:

This subclass is indented under subclass 432. Subject matter wherein the winding mechanism includes a material dispenser (e.g., a nozzle) and a motion transmission means for causing relative oscillation and reciprocation between the material dispenser and the core for wrapping the elongated material about the projection.

- (1) Note. Typically the compound movement involves the following four sequential motions to form a convolution: (a) an axial movement of the dispenser through the core to deposit material along a first side of the projection; (b) an arcuate movement about an end face of the core to align the elongated material with the second side of the projection; (c) a reverse axial movement of the material to deposit the material along the second side of the projection; and (d) a final reverse arcuate movement about the opposite end face of the core to position the elongated material at the initial point ready to form a second convolution.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, subclasses 20 through 109, particularly subclasses 25+ for a subcombination or a mechanism of general utility for producing a compound movement.

432.3 Shuttle reciprocated:

This subclass is indented under subclass 432.2. Subject matter wherein the motion transmission means moves the material dispenser (shuttle) through the core in first and second oppositely directed, substantially linear motions to deposit material on opposite sides of the core projection.

432.4 And oscillated:

This subclass is indented under subclass 432.3. Subject matter wherein the motion transmission means additionally moves the material dispenser in first and second oppositely directed arcuate motions between the first and second oppositely directed linear motions.

432.5 With radially shifted guide component:

This subclass is indented under subclass 432.4. Subject matter wherein the motion transmission means additionally moves a material engaging portion of the winding mechanism (e.g., a guide) radially with respect to the core to enhance the placement of the convolution of material about the projection.

- (1) Note. Typically, the transmission means shifts a material guide radially outward after it clears an end of the core to force the material deeper toward the root of the projection, thus permitting a more orderly placement of material.
- (2) Note. The material engaging portion subjected to radial movement may be the material dispenser or an element discrete from the dispenser.

432.6 Having particular core holder or material guide:

This subclass is indented under subclass 432. Subject matter wherein special significance is attributed to either (a) a structure for supporting the core during winding or (b) a device to direct the elongated material to a desired winding point.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 433.4, for a workholder for an armature.

SEE OR SEARCH CLASS:

- 269, Work Holders, for a core holder of general use.
- 279, Chucks or Sockets, for a core mounted in a general purpose chuck or socket.

433 On externally toothed core (e.g., motor armature):

This subclass is indented under subclass 430. Subject matter wherein the core on which material is wound includes an outer surface provided with at least one pair of elongated slots which define between them a projection (tooth or pole piece) and comprising a winding mechanism for winding material about the projection for more than 360 degrees.

SEE OR SEARCH CLASS:

- 29, Metal Working, particularly subclass 33, 598, and 732+ for motor armature winding combined with an additional manufacturing step or apparatus.
- 74, Machine Element or Mechanism, appropriate subclasses for particular detail of a mechanical movement as a subcombination or of general use.
- 140, Wireworking, subclass 92.1 and 92.2 for winding an armature coil on a form for subsequent transfer of either a convolution or entire coil from the form.
- 310, Electrical Generator or Motor Structure, subclasses 194+ and 261+ for a detail of a rotor core, end turn support structure, or a particular winding pattern expressed as steps of a method for hand winding.

433.1 By compound movement mechanism:

This subclass is indented under subclass 433. Subject matter wherein the winding mechanism comprises a material dispenser (e.g., a nozzle) and a motion transmission means to cause relative oscillation and reciprocation between the material dispenser and the core for winding the elongated material about the projection.

- (1) Note. Typically the compound movement involves the following four sequential motions to form a convolution: (a) an axial movement of the material dispenser through one of the slots to deposit material along one of the slots; (b) an arcuate movement about an end face of the core to align the material dispenser with a second slot; (c) a reverse axial movement of the material dispenser through the second slot to deposit the material along the second slot; and (d) a final reverse arcuate movement about the opposite end face of the core end to position the material dispenser at the initial point ready to form a second convolution.
- (2) Note. The arcuate movements referred to in this subclass are for creating windings and should not be confused with an indexing motion that may be used to

determine a particular placement of the windings.

433.2 By rotating core:

This subclass is indented under subclass 433. Subject matter wherein the winding mechanism includes a mechanism for rotating the core about a winding axis to cause the elongated material to be wound around the projection.

- (1) Note. The rotating movement referred to in this subclass is for creating windings and should not be confused with an indexing motion that may be used to determine a particular placement of the windings.

433.3 By orbiting guide:

This subclass is indented under subclass 433. Subject matter wherein the winding mechanism includes a material supply in the form of a spool or guide mounted to rotate about the projection to cause the elongated material to be wound on the projection.

- (1) Note. The orbiting movement referred to in this subclass is for creating windings and should not be confused with an indexing motion that may be used to determine a particular placement of the windings.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 224+, for an orbital guide for wrapping strand onto the spool of a fishing reel.
- 361+, for an orbital guide for wrapping material (e.g., wire) on a body to form loops.
- 386, for a reeling device with an orbital winding guide.
- 435, for an orbital guide for wrapping material on a spherical core.
- 439, for an orbital guide for wrapping material on an article.

433.4 Having particular core holder or material guide:

This subclass is indented under subclass 433. Subject matter wherein special significance is attributed to either (a) structure for supporting the core during winding or (b) a device to

direct the elongated material to a desired winding point.

SEE OR SEARCH THIS CLASS, SUBCLASS:

432.6, for a workholder for supporting a stator.

SEE OR SEARCH CLASS:

269, Work Holders, for a core holder of general use.

279, Chucks or Sockets, for a core mounted in a general purpose chuck or socket.

434 Through opening in ring-shaped core:

This subclass is indented under subclass 430. Subject matter wherein the core is formed as a closed or substantially closed annulus defining a central aperture, and comprising a winding mechanism adapted to repetitively direct the material through the central aperture and radially around the core.

SEE OR SEARCH CLASS:

29, Metal Working, particularly subclass 605, 618, and 729+ for similar winding combined with an additional manufacturing operation such as assembling.

53, Package Making, subclass 204 for winding a covering material for the purpose of providing an annular package.

100, Presses, subclass 12 for apparatus to apply a binder through an annular arrangement of material.

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, particularly subclass 172, 180, and 189 for a method of winding combined with claimed adhesive bonding, and subclass 443 for a similar apparatus.

206, Special Receptacle or Package, subclasses 303+ for an annular package.

336, Inductor Devices, particularly subclass 15, 213, and 229 for a detail of a wound electrical inductor.

434.1 By supply coil linked with core:

This subclass is indented under subclass 434. Subject matter wherein the winding mechanism comprises an annular shuttle or spool having a circumference on which loops of

elongated material are wound in a manner to interconnect the loops of elongated material with the core in the manner of two links of a chain so that anchoring one end of the material relative to the core followed by rotation of the shuttle or spool withdraws material from the loops onto the core.

(1) Note. The shuttle or spool of this subclass may be flexible and formed as an endless chain, belt, hoop, or the like including a length of the material to be wound formed into a loop.

434.2 Supply coil on rigid spool:

This subclass is indented under subclass 434.1. Subject matter wherein the shuttle or spool is normally inflexible.

434.3 Having material guide slidable on spool:

This subclass is indented under subclass 434.2. Subject matter wherein the spool includes a mounting surface movably supporting a guide for directing the elongated material from the loops to the core as the spool is rotated through the central aperture in the ring-shaped core.

(1) Note. Typically, material is wound on the core by rotating the spool in one direction while the guide acts as a shuttle mounted on a rim of the spool to direct the elongated material over the spool rim to the core. The guide normally slides on the spool so that egress of material from the spool is dependent on the rate of winding on the core rather than the rotation of the supply spool.

434.4 Having guide ring coaxial with spool:

This subclass is indented under subclass 434.2. Subject matter wherein the shuttle or spool comprises a supply spool and a distinct annular guide ring driven for rotation about an axis collinear with the axis of the supply spool for directing material from the spool to the core for winding.

434.5 By supply coil cycling through opening:

This subclass is indented under subclass 434. Subject matter wherein the winding mechanism includes a wrapping member carrying a length of elongated material formed into convolutions defining a supply coil, with or without a spool, which wrapping member with its

supply coil are orbited through the central aperture in the ring-shaped core to unwind the material from the supply coil onto the core.

434.6 Supply coil tangentially positioned on a winding shuttle:

This subclass is indented under subclass 434.5. Subject matter wherein the wrapping member is formed as a ring-shaped shuttle having a circumference, and the supply coil is formed with its axis substantially aligned with or parallel to that circumference.

434.7 By material end cycling through opening:

This subclass is indented under subclass 434. Subject matter wherein a selected length of the elongated material provides a terminus, and the winding mechanism includes means (e.g., a feeder) for repeatedly propelling the terminus through the central opening in the ring-shaped core and drawing the material tightly about the core.

434.8 Multistep cycle:

This subclass is indented under subclass 434.7. Subject matter wherein the means for repeatedly propelling the material end through the core aperture to cause winding includes structure to sequentially draw a length of material through the core aperture, stop, reorient either or both the material end and core, and return the material end to the core aperture.

434.9 Having particular core holder or indexing means:

This subclass is indented under subclass 434. Subject matter wherein special significance is attributed to either (a) a specific support for the ring-shaped core or (b) means to relatively shift the core and winding mechanism to cause a desired distribution of material as it is wound on the core.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, particularly subclasses 20 through 109 for a detail of a mechanical movement to achieve a specific motion.
- 269, Work Holders, particularly subclasses 55+ for details of a general purpose work support mounted for movement.

- 279, Chucks and Sockets, for a detail of a chuck or receptacle-type work holder for various uses.

435 On spherical core:

This subclass is indented under subclass 430. Subject matter including a winding mechanism particularly adapted to wind elongated material onto a ball-shaped core.

- (1) Note. In this subclass, winding is typically caused by driving an orbital guide, core support axle, or opposed core grippers while indexing either the guide or core to distribute the windings, which indexing may involve the use of a separate peripheral core-engaging driver.

SEE OR SEARCH CLASS:

- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, particularly subclass 146, 170, and 186 for a method of winding on a spherical mass or core claimed with bonding of the elongated material to the article, and subclass 445 for the corresponding apparatus.
- 220, Receptacles, subclasses 62.19+ and 588+ for receptacles having a wall that includes a layer of wound elongate material.
- 273, Amusement Devices: Games, various subclasses for a ball article used in a sport or game.

435.1 Core peripherally driven to wind:

This subclass is indented under subclass 435. Subject matter wherein the winding mechanism includes core-rotating means (e.g., a powered belt) adapted to bear against an outer surface of the core.

435.2 By roller:

This subclass is indented under subclass 435.1. Subject matter wherein the core-rotating means includes a driven cylindrical, conical, or similarly shaped member engaging the core to transmit rotation to the core.

436 Modified spherical core or article:

This subclass is indented under subclass 430. Subject matter including a winding mechanism particularly adapted to wind the elongated material either (a) on a core having an elliptical

or partially spherical shape (e.g., a cylinder with a dome-shaped end) or (b) in a particular pattern on a core to create an elliptical or partially spherical shape.

SEE OR SEARCH CLASS:

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, particularly subclass 172 and 189 for winding irregularly shaped members claimed with adhesive bonding, and subclasses 425 and 446 for similar apparatus.

220, Receptacles, subclasses 62.19+ and 588+ for receptacles having a wall that includes a layer of wound elongate material.

437 On irregularly shaped core:

This subclass is indented under subclass 430. Subject matter comprising a winding mechanism that is driven in a manner particularly adapted to accommodate a core having a complex winding surface, particularly an adaptation to variable winding rates due to (a) a noncircular winding surface cross-sectional or lengthwise of a core or (b) special distribution patterns appropriate for a core having longitudinally curved, offset, or separated winding surfaces.

- (1) Note. These subclasses provide for winding onto an irregularly shaped core significantly deviating from a right circular cylinder due to an overall formation or accommodation of a special projection or aperture other than a common helical groove. However, creation of an irregular winding having an atypical distribution pattern is provided for elsewhere.

SEE OR SEARCH CLASS:

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, particularly subclasses 166+, 189, 425+, and 443+ for winding combined with adhesive bonding.

437.1 Having curvilinear or offset core portions:

This subclass is indented under subclass 437. Subject matter wherein the complex winding surface of a single core either (a) is disposed about an elongated arcuate line, or (b) includes

two winding surface portions disposed about angularly related or parallel axes.

- (1) Note. Winding a “single article” is intended to include L-shaped, C-shaped, U-shaped, and similarly shaped articles that may include spaced winding surfaces with offset or parallel axes of a unified article, but exclude pin boards and similar devices where identical parallel pins, rows, or columns are simply repetitively wound even though the pins may be on a common support.

SEE OR SEARCH THIS CLASS, SUBCLASS:

434+, for winding on a ring-shaped article.

437.2 Diverse coils:

This subclass is indented under subclass 437.1. Subject matter wherein the winding mechanism forms plural distinct bundles or coils differing from each other in size, shape, winding pitch, or other physical characteristic.

437.3 Noncircular core:

This subclass is indented under subclass 437. Subject matter wherein the complex winding surface has a cross-section perpendicular to the axis of winding that deviates significantly from a circle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

537, for a machine for convolutely winding on an irregularly shaped core, and
613.2, for an irregularly shaped winding core, per se.

437.4 Flattened core:

This subclass is indented under subclass 437.3. Subject matter wherein the core has one dimension (width) materially greater than a perpendicular dimension (thickness) to define a card or planar winding surface (e.g. a width ten times greater than a thickness).

SEE OR SEARCH THIS CLASS, SUBCLASS:

537, for a machine for convolutely winding on an irregularly shaped core, and
613.3, for a flattened winding core.

438 For prestressing core:

This subclass is indented under subclass 430. Subject matter comprising a winding mechanism having means to develop longitudinal tension in a portion of the elongated material prior to winding, which tension is of such a magnitude as to exert an appreciable compression force on the core after winding.

- (1) Note. Typically, the material is a relatively strong metallic or plastic cable applied to a core (e.g., a rotatable pipe or vessel or a stationary fluid reservoir) to strengthen the resulting article against internal pressure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 410+, for a tensioner in a winding device or of general use.

SEE OR SEARCH CLASS:

- 57, Textiles: Spinning, Twisting, and Twining, subclasses 3+ for winding an indefinite length strandlike structure.
- 138, Pipes and Tubular Conduits, for a particular pipe structure.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, particularly subclasses 166+, 184+, 425+, and 443+ for winding material claimed with bonding.
- 220, Receptacles, subclasses 62.19+ and 588+ for receptacles having a wall that includes a layer of wound elongate material.

438.1 By orbiting material supply:

This subclass is indented under subclass 438. Subject matter wherein the winding mechanism includes a source of elongated material rotated about the core to cause winding.

SEE OR SEARCH CLASS:

- 57, Textiles: Spinning, Twisting, and Twining, subclass 10 and 13+ for winding on a rotatable, indefinite length strandlike article.
- 220, Receptacles, subclasses 565+ for a particular tank structure.

439 By orbiting material supply:

This subclass is indented under subclass 430. Subject matter comprising a winding mechanism having a source of material (e.g., a supply coil or material directing guide) adapted to rotate about the article to cause material to be wrapped on the article core.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 128, for a strand unwinding device which may include an orbital guide.
- 224+, for an orbital guide for wrapping strand onto the spool of a fishing reel.
- 361+, for an orbital guide for wrapping material (e.g., wire) on a body to form loops.
- 386, for a reeling device with an orbital winding guide.
- 433.3, for an orbital guide for wrapping wire or the like onto an externally slotted core.
- 435, for an orbital guide for wrapping material on a ball.
- 438.1, for an orbital guide for wrapping prestressing material onto a vessel.
- 472.6, for a helical winding device having a material supply or guide that rotates about a take-up.

SEE OR SEARCH CLASS:

- 29, Metal Working, particularly subclass 33 and 605 for wire winding combined with an additional manufacturing function.
- 57, Textiles: Spinning, Twisting, and Twining, subclass 10 and 13+ for a rotatable guide for wrapping an indefinite length, strandlike structure.
- 140, Wireworking, subclass 92.1 and 124 for a device for wrapping wire into a coil.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 166+, 184+, 425+, and 443+ for winding which may include the use of a rotatable guide combined with bonding wound material to a core or the like.

439.1 Material guide disposed about core tip (e.g., terminal winder):

This subclass is indented under subclass 439. Subject matter wherein the core is in the form of a stub, and the orbital material supply is in the form of a guide rotatable about a free end of the stub in a plane that intersects the stub.

439.2 Motor powered:

This subclass is indented under subclass 439.1. Subject matter comprising means for converting potential energy to kinetic energy, which means is connected to the guide for rotating the guide about the stub.

439.3 Handheld:

This subclass is indented under subclass 439.2. Subject matter wherein the winding mechanism includes a portion specifically adapting the winding mechanism to be carried by a human operator.

439.4 Simultaneous winding:

This subclass is indented under subclass 439. Subject matter wherein the winding mechanism includes plural sources of elongated material adapted to concurrently wrap a plurality of materials about one or more article cores.

SEE OR SEARCH THIS CLASS, SUBCLASS:

388.6+, for multiple spools in a reeling device.
443.1+, for simultaneous winding onto a rotating core to form an article.

474.3+, for a device for helically winding alternate or successive take-ups.

530+, for simultaneously convolutedly winding storage packages.

439.5 On single core:

This subclass is indented under subclass 439.4. Subject matter wherein a plurality of materials are collectively wound onto an individual article core.

439.6 Supply coil coaxial with core:

This subclass is indented under subclass 439.5. Subject matter wherein the elongated materials are unwound from supply coils disposed on a common axis with the core.

SEE OR SEARCH CLASS:

57, Textiles: Spinning, Twisting, And Twining, subclass 10 and 16 though 18 for wrapping material onto a coaxial strandlike structure of indefinite length.

440 Sequential winding:

This subclass is indented under subclass 439. Subject matter wherein the source of material orbits the core to wind a length of the elongated material into successive and distinct convolution bundles (coils).

(1) Note. This subclass typically provides for winding a coil bundle, not merely spaced convolutions, on each of a succession of articles.

440.1 On single core:

This subclass is indented under subclass 440. Subject matter wherein the winding mechanism winds plural, distinct bundles (coils) onto an individual core.

441 Having mechanism to distribute convolutions:

This subclass is indented under subclass 439. Subject matter wherein the winding mechanism includes means for positioning individual turns of the elongated material in a predetermined order or pattern as the material is wound on the article core.

SEE OR SEARCH THIS CLASS, SUBCLASS:

241+, for a strand distributor associated with an orbital guide in a fishing reel.

397.2+, for a material distributor in a reeling device.

476.7+, for a device for distributing elongated material on the take-up of a helical winding apparatus.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, particularly subclasses 20 through 109 for a detail of a mechanical movement to achieve a specific motion which may be appropriate for winding material distribution.

441.1 Reciprocating:

This subclass is indented under subclass 441. Subject matter wherein the means for positioning the elongated material shifts the material in opposite directions substantially parallel to the axis of winding.

441.2 Single winding pass:

This subclass is indented under subclass 441. Subject matter wherein the means for positioning the elongated material shifts the material in only one direction substantially parallel to the axis of winding.

441.3 Core supports winder:

This subclass is indented under subclass 441.2. Subject matter wherein the winding mechanism includes a shuttle with a supply of elongated material and means mounting the shuttle for engagement with the core so that the shuttle can both rotate on the core for winding and move longitudinally along the core for distributing material.

441.4 Material supply coaxial with core:

This subclass is indented under subclass 441.2. Subject matter comprising means to support the winding mechanism and core about a common axis.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

439.6+, for an orbital winder for simultaneously winding coils on cores coaxial with the winder.

SEE OR SEARCH CLASS:

57, Textiles: Spinning, Twisting, And Twining, subclass 10 and 16 through 18 for wrapping material onto a coaxial strandlike structure of indefinite length.

442 Handheld wrapping tool:

This subclass is indented under subclass 439. Subject matter wherein the winding mechanism is constructed in manner particularly adapting it to be supported by a human operator during winding.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

439.3, for a handheld, orbital terminal winder.

916, for a hand tool useful in winding, tensioning, or guiding.

443 By rotating core:

This subclass is indented under subclass 430. Subject matter including a winding mechanism having means mounting the core for rotation to cause the elongated material to be wound on the core.

SEE OR SEARCH CLASS:

29, Metal Working, particularly subclass 33 and 605 for wire winding combined with an additional manufacturing operation.

57, Textiles: Spinning, Twisting, and Twining, subclass 11 and 13+ for a rotatable guide for winding an indefinite length strandlike structure.

140, Wireworking, subclass 92.2 and 124 for a device for winding wire into a coil.

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 166+, 184+, 425+, and 443+ for winding which may include the use of a rotatable guide combined with bonding wound material to a core or the like.

443.1 Simultaneous winding:

This subclass is indented under subclass 443. Subject matter wherein the winding mechanism includes plural winding supplies (supply spools or guides) adapted to concurrently wind a plurality of materials about one or more cores.

444 On single core:

This subclass is indented under subclass 443.1. Subject matter wherein the plural winding supplies deliver separate materials for winding on an individual core.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

439.5+, for winding separate materials on a single article core by use of orbital material supplies.

444.1 Dielectric and conductive layers (e.g., capacitor):

This subclass is indented under subclass 444. Subject matter wherein the winding materials include alternate electrically conductive and dielectric strips wound on the core in superposed convolutions usually to form an electrical capacitor (condenser).

- (1) Note. Patents disclosing a capacitor winding machine or method without details specific to conductor or dielectric winding are classified as generic winding machines provided for later in this class.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 522+, for a cutting device in a convolute winding machine.
530.2, for generalized simultaneous winding of superposed layers.

SEE OR SEARCH CLASS:

- 29, Metal Working, subclass 25.42 for winding a capacitor and assembling leads or other manufacturing operation.

444.2 Special web layering (e.g., offset edges):

This subclass is indented under subclass 444.1. Subject matter comprising means for disposing margins of respective strips in a predetermined manner, typically with a dielectric strip even with or overlapping a conductive strip.

444.3 Continuous or semicontinuous winding:

This subclass is indented under subclass 444.1. Subject matter comprising a mechanism for connecting strips to a core for winding either: (a) without interruption, or (b) with interruption materially reduced from that which would normally occur in manually replacing a wound core with a blank core.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 532+, for a convolute winding machine with a lead end attachment feature.
533, for a convolute winding machine with a coil removal feature.

444.4 Adjacent helical layers (e.g., strand on strand):

This subclass is indented under subclass 444.1. Subject matter wherein the plural winding supplies deliver (a) electrically conductive wire wound in convolutions to provide a layer and (b) dielectric cord jointly wound in convolutions to form an insulating layer over the conductive layer.

444.5 Web layer wound between helical layers:

This subclass is indented under subclass 444.1. Subject matter wherein the plural winding supplies deliver (a) an electrically conductive wire wound in convolutions to provide a layer and (b) a dielectric web to be wound upon the conductive layer.

445 Sequential winding:

This subclass is indented under subclass 443. Subject matter wherein the winding mechanism is adapted to wind material to create distinct coil groups by either (a) progressively introducing the material to each of a succession of cores or (b) successively winding distinct coils on different areas of a single core.

- (1) Note. The succession of cores denotes the provision of a particular method of juxtaposing the material and respective cores without interrupting the overall operation of the winding mechanism (e.g., by indexing a turret carrying respective cores to a winding station or relocating a material supply to be captured and wound on a subsequent core).

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 440+, for sequentially winding articles by orbiting a material supply about an article core.
474.3+, for a device for helically winding alternate or successive take-ups.
531+, for sequentially winding convolute coils to form storage coils.

445.1 On single core:

This subclass is indented under subclass 445. Subject matter wherein the winding mechanism is adapted to successively winding distinct coils on a single core.

- (1) Note. The distinct coils can be successively wound from (a) separate materials or (b) a continuous length of a single material creating plural coils recognizably distinct by a clear change in winding placement, orientation, shape, or dimension. Merely reversing the direction of distributing material is a typical method of winding a single coil, however, winding a layer at a right angle to a previous layer would be sequential winding due to the atypical manipulation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

439.5+, for sequentially winding articles by orbiting a material supply about an article core.

446 Having manual drive:

This subclass is indented under subclass 443. Subject matter wherein the winding mechanism is powered by a human operator, typically through means of a crank or foot treadle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

249+, for a fishing reel drive mechanism, particularly subclasses 283+ for a particular handcrank.

350, for a manually operated drive for winding a machine convertible information carrier.

395+, for a manual drive in a reeling device.

546.1, for a manual drive in a convolute package winder.

447 Having mechanism for distributing convolutions:

This subclass is indented under subclass 443. Subject matter wherein the winding mechanism includes means to direct the material being wound in a predetermined pattern of placement on the article core (e.g., by relatively shifting the supply and core during winding).

SEE OR SEARCH THIS CLASS, SUBCLASS:

241+, for a material distributing means in a fishing reel.

397.2+, for a material distributing means in a reeling device.

476.7+, for a device for distributing elongated material on the take-up of a helical winding apparatus.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, particularly subclasses 20 through 109 for a detail of a mechanical movement to achieve a specific motion which may be appropriate for winding material distribution.

447.1 By reciprocating guide or supply:

This subclass is indented under subclass 447. Subject matter wherein the means to direct the material includes a mechanical movement for distributing the elongated material in opposite directions substantially parallel to the axis of winding.

447.2 Threaded operator:

This subclass is indented under subclass 447.1. Subject matter wherein the means for directing the material includes a helically grooved shaft engaged by a follower in a manner that rotation of the shaft causes linear movement of the follower connected to either a material supply or core to effect the distribution of the material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

278+, for a fishing reel with a reciprocated level winding guide.

397.3, for a reeling device with a reciprocated level winding guide.

482.4+, for a material distributing mechanism in a helical winding apparatus which may include a guide shifted by a helically grooved shaft (a cam) and cooperating follower.

447.3 Single winding pass:

This subclass is indented under subclass 447. Subject matter wherein the means to direct the material distributes the elongated material in only one direction substantially parallel to the axis of winding.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

441.2+, for unidirectional material distribution in an article winder using an orbital material supply.

448 Having particular workpiece holder:

This subclass is indented under subclass 430. Subject matter wherein special significance is attributed to structure for supporting the core during winding.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

570+, for a holder of a supply or takeup coil.

SEE OR SEARCH CLASS:

269, Work Holders, particularly subclasses 55+ for details of a general purpose work holder that is shiftable relative to a supporting base or is moveable between different work stations.

279, Chucks and Sockets, for a detail of a chuck or receptacle-type work holder for various uses.

448.1 Core flexure inhibitor (e.g., for winding onto hose):

This subclass is indented under subclass 448. Subject matter wherein the structure for supporting includes means to prevent or limit longitudinal bending of the article core during winding.

- (1) Note. This subclass provides for a winder with a workpiece support particularly designed to limit deflection of the workpiece encountered when winding articles such as long pipe, hose, musical and archery strings, or fishing rods, typically by use of an intermediate core support or biased core end holder.

470 HELICAL OR RANDOM WINDING OF MATERIAL:

This subclass is indented under the class definition. Apparatus or method for creating a storage coil formed by coiling an elongated material (e.g., textile strand, wire, or narrow web) directly on the outer surface of a take-up member adapted to be supported at a winding station while either systematically distributing

convolutions of the material parallel to the axis or permitting convolutions of the coiled material to be placed at indiscriminate points along the axis in which the coiled material is removed from the winding station (i.e., removed from the means for supporting it for rotation) before unwinding the material.

- (1) Note. This subclass includes winding or unwinding a relatively small portion of the material on or from the storage coil or a spool for the purpose of facilitating future or continued winding or unwinding of the material (e.g., for repositioning the outside end of the material).
- (2) Note. The combination of a traverse guide for controlling the distribution of material on a rotating take-up with means for moving the guide is a subcombination of a helical winding apparatus that is properly classified here even if a take-up member is not present. A guide without structure designed to move it in a manner to control distribution of material on a take-up is classified in the appropriate guide subclass elsewhere in this class even if it is intended to be used in a traverse mechanism.

SEE OR SEARCH CLASS:

- 19, Textiles: Fiber Preparation, particularly subclass 149 and 159 for coiling a sliver (an untwisted strand group) on a form or in an open can.
- 57, Textiles: Spinning, Twisting, and Twining, particularly subclasses 58.67+, 71, 78, 92, 98, 99, 303, 305, and 313 for a helical winding/unwinding device that additionally provides a twisting or related function.
- 65, Glass Manufacturing, subclass 10.1 for winding combined with glass making.
- 87, Textiles: Braiding, Netting, and Lace Making, subclass 31 and 59 for a winding device combined with a Class 87 art device.
- 112, Sewing, subclass 279 for bobbin winding combined with a specific sewing process or apparatus.
- 118, Coating Apparatus, subclass 235 for winding apparatus combined with coating means.

- 493, Manufacturing Container or Tube From Paper; or Other Manufacturing From Sheet or Web, subclasses 299 through 302 for winding or wrapping of a specified sheet or web to manufacture a container or tube.
- 471 For web material:**
This subclass is indented under subclass 470. Subject matter wherein the machine or process is particularly constructed to wind and helically distribute a material having a width appreciably greater than its thickness (e.g., a strip, fabric, film, or tape).
- SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, subclasses 20+, particularly subclass 22 for a mechanical movement of general use that may appropriate for material distribution.
- 472 On a hand tool (e.g., tatting shuttle or heddle needle):**
This subclass is indented under subclass 470. Subject matter wherein the take up is an implement intended to be manually maneuvered after material is wound on it consisting of a tatting shuttle, heddle needle, or seine needle.
- 472.1 Untwisted fiber bundle (i.e., sliver):**
This subclass is indented under subclass 470. Subject matter intended for winding groups of substantially untwisted fibers.
- 472.2 Particular traverse of bundle:**
This subclass is indented under subclass 472.1. Subject matter in which particular significance is attributed to a mechanism or process for distributing the material on the take up.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
476.7+, for a mechanism for distributing material along a take-up having general application to helical winding apparatus.
- 472.3 Of twine mass or ball:**
This subclass is indented under subclass 470. Subject matter wherein the elongated material is coiled by a winding mechanism having: (1) a supply of elongated material or a guide for elongated material, (2) structure supporting the take-up, and (3) material distributing means to direct the material in a predetermined fashion during winding, and wherein the distributing means causes relative movement between the supply or guide and take-up support to wind convolutions tending to be at a great pitch to the axis of the take-up to build up an elongated wound package resembling a rounded bundle or sphere.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
435, for a device for winding a spherical article.
- SEE OR SEARCH CLASS:
156, Adhesive Bonding And Miscellaneous Chemical Manufacture, particularly subclass 170, 186, 189, and 445 for winding a sphere combined with bonding.
- 472.4 By orbital flyer:**
This subclass is indented under subclass 472.3. Subject matter wherein the winding mechanism has a guide that is rotated about the take-up to wind the elongated material on it.
- 472.5 To form coreless package:**
This subclass is indented under subclass 470. Subject matter in which the storage coil is removed from the take-up in coiled form after winding.
- (1) Note. Typical of this subclass are skein and hank winders.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
361.2, for loop forming devices and methods for creating collections or packages of coiled material in which individual coils are formed by wrapping material around a temporary form that does not support the collection or package.
472.3, for a winding device or method for making coreless substantially spherical packages.
473.4, for an apparatus or method for removing a wound package including a supporting take-up member (core) from a winding machine.

472.6 By orbital flyer:

This subclass is indented under subclass 470. Subject matter including a guide for the elongated material that is rotated about the take-up to cause the elongated material to be wound.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

361, for a loop forming orbital guide.

472.7 On planar form (e.g., card, board):

This subclass is indented under subclass 470. Subject matter wherein the take-up is a structure having two parallel substantially planar external surfaces making up a substantial portion of the surface of the take-up and being closely spaced relative to their overall dimensions.

472.8 Plural distinct strands onto single spool (e.g., doubling machine):

This subclass is indented under subclass 470. Subject matter in which the elongated material being wound consists of a plurality of distinct material supplies and they are simultaneously wound on a single take-up without any significant twisting.

SEE OR SEARCH CLASS:

28, Textiles: Manufacturing, subclass 190 for beaming apparatus in which plural strands are wound onto a warp beam for subsequent use for supplying warp threads in a weaving loom.

57, Textiles: Spinning, Twisting, and Twining, for twisting plural strands together and winding them.

472.9 Having material controlled stop:

This subclass is indented under subclass 472.8. Subject matter in which a detector monitors a condition of the material and a control responsive to the detector stops the winding apparatus or process in response to sensing a predetermined state of the material.

473 Break or exhaust responsive:

This subclass is indented under subclass 472.9. Subject matter in which the state of material that brings about stoppage of the winding apparatus or process is breakage of the material or depletion of the supply of the material.

473.1 Separating wound package from driver engaging package periphery:

This subclass is indented under subclass 473. Subject matter in which the take-up is driven by engagement of a drive member with its periphery and the take up is moved out of engagement with the drive member in response to sensing the predetermined state to discontinue winding.

473.2 Coil diameter responsive:

This subclass is indented under subclass 472.9. Subject matter in which the condition monitored is the diameter of the material wound on the take-up and the apparatus or process is stopped when the diameter reaches a predetermined magnitude.

473.3 Separating wound package from driver engaging package periphery:

This subclass is indented under subclass 473.2. Subject matter in which the take-up is driven by engagement of a drive member with its periphery and the take up is moved out of engagement with the drive member when the diameter reaches the predetermined magnitude.

473.4 Including wound package or empty spool handling:

This subclass is indented under subclass 470. Subject matter including a tending device facilitating continued winding by (1) removing a wound package and associated take-up member from a winding support, (2) placing a fresh package of wound material on an unwinding support, or (3) mounting or removing an empty spool on or from a winding or unwinding support.

- (1) Note. The winding support and unwinding support are the structures mounting the package for winding or unwinding, respectively. They may be movable from one position to another (e.g., in a turret winder). The presence of a movable support is not sufficient for placement in this subclass.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

533, for spool loading or coil removal in a convolute winder.

- 559, for supply coil replenishment in an unwinding device.

SEE OR SEARCH CLASS:

- 57, Textiles: Spinning, Twisting, and Twining, particularly subclass 266 for spool loading or coil removal in a spinning frame or similar filament spinning environment.
- 198, Conveyors: Power-Driven, for a conveyor which may include a spool or wound package conveyance without a specified means to load or remove a spool or wound package with respect to a winding station.
- 414, Material or Article Handling, for various arrangements for handling or transferring material which may include a spool or wound package without a specified means to load or remove a spool or package with respect to a winding station.

473.5 Removing wound package from or loading empty spool onto a winding station:

This subclass is indented under subclass 473.4. Subject matter wherein the tending device includes a transfer mechanism associated with the winding station for either: (a) extracting a wound package from, or (b) placing an empty spool in, the winding station.

473.6 Carriage-mounted handling device:

This subclass is indented under subclass 473.5. Subject matter comprising plural winding stations and wherein the transfer mechanism includes a support mounted for movement between winding stations.

SEE OR SEARCH CLASS:

- 57, Textiles: Spinning, Twisting, and Twining, subclass 268 for the use of a carriage for transferring spools or wound packages associated with a spinning frame.

473.7 Including additional material manipulation:
This subclass is indented under subclass 473.6. Subject matter wherein the transfer mechanism includes means used to engage and act upon the elongated material to facilitate the transfer of either the wound package or empty spool.

- (1) Note. Typically, the material manipulation involves grasping, cutting and positioning a strand for subsequent winding.

SEE OR SEARCH CLASS:

- 57, Textiles: Spinning, Twisting, and Twining, subclass 269 for loading or unloading spools or packages in a spinning frame by use of a carriage that also includes means to manipulate the material.

473.8 Including additional material manipulation:

This subclass is indented under subclass 473.5. Subject matter wherein the transfer mechanism includes means used to engage and act upon the elongated material to facilitate the transfer of either the wound package or empty spool.

- (1) Note. Typically, the material manipulation involves grasping, cutting and positioning a strand for subsequent winding.

SEE OR SEARCH CLASS:

- 57, Textiles: Spinning, Twisting, and Twining, subclass 269 for loading or unloading spools or packages in a spinning frame by use of a carriage that also includes means to manipulate the material.

473.9 By ejector:

This subclass is indented under subclass 473.5. Subject matter wherein the transfer mechanism includes a device to at least partially forcibly discharge the wound package from the winding station.

SEE OR SEARCH CLASS:

- 57, Textiles: Spinning, Twisting, and Twining, subclass 221 and 273 for loading or unloading spools using an ejector associated with a spinning frame.

474 Loading supply package on or removing empty spool from unwinding station:

This subclass is indented under subclass 473.4. Subject matter comprising a supply package support on the winding machine and wherein the tending device is associated with the supply support and includes a transfer mechanism for either: (a) installing a fresh supply package of

material (cop), or (b) disposing of an exhausted supply spool.

474.1 On a tray with vertical spool support:

This subclass is indented under subclass 474. Subject matter wherein the transfer mechanism includes a generally horizontal carrier having upright package mounting means for installing a fresh supply package or removing an exhausted supply spool.

- (1) Note. Typically, the tray is used to support strand supply packages, termed cops, removed from a spinning frame for transportation to a winding machine to serve as a supply, after which the tray with empty spools is returned to the spinning frame for reuse.

474.2 Including additional material manipulation:

This subclass is indented under subclass 474. Subject matter wherein the transfer mechanism includes means used to engage and act upon the elongated material to facilitate the transfer of either the fresh supply package or exhausted supply spool.

- (1) Note. Typically, the material manipulation involves grasping, cutting and positioning a strand for subsequent unwinding.

474.3 Alternately or sequentially wound spools:

This subclass is indented under subclass 470. Subject matter comprising supporting means to associate a plurality of take-up members in a manner to facilitate successive winding on them.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 388, for simultaneously winding materials on a reeling device.
440, and 445, for the sequential winding of materials on a core to form an article.
531, for sequentially winding convolute storage coils.

SEE OR SEARCH CLASS:

- 57, Textiles: Spinning, Twisting, and Twining, particularly subclass 13 for winding plural strands on a take-up member of indefinite length.

474.4 Spools on parallel spindles:

This subclass is indented under subclass 474.3. Subject matter wherein the supporting means mounts the take-up members so that their winding axes are parallel.

474.5 Spindles on indexable turret:

This subclass is indented under subclass 474.4. Subject matter wherein the supporting means mounts the take-up members for stepwise arcuate movement between a position in which the material is wound onto the take-up and another, non-winding, position.

474.6 Coil engaging drive (i.e., peripheral drive):

This subclass is indented under subclass 474.5. Subject matter wherein each take-up member includes a winding surface about which the elongated material is to be coiled and further comprising a power transmitting element adapted to contact the winding surface or material coiled thereon to induce rotation of the take-up member to cause winding.

- (1) Note. A drive engaging a flange of a spool on which material is wound is not classified here.

474.7 Including particular material snagger:

This subclass is indented under subclass 474.4. Subject matter wherein special significance is attributed to a mechanism for capturing the elongated material to facilitate a transfer of the material winding operation from one take-up to a succeeding take-up member.

474.8 Coaxial spools:

This subclass is indented under subclass 474.3. Subject matter wherein the supporting means positions at least some of the take-up members so that their axes lie on a common line.

474.9 On separately driven spindles:

This subclass is indented under subclass 474.8. Subject matter in which two of the coaxial take-up members have supporting means rotated by distinct drive means.

- (1) Note. The distinct drive means may include a single power source acting on the supporting means through different drive paths or multiple power sources.

- 475 Including particular material snagger:**
This subclass is indented under subclass 474.9. Subject matter wherein special significance is attributed to a mechanism for capturing the elongated material to facilitate a transfer of the material winding operation from one take-up to a succeeding take-up member.
- 475.1 Joining ends of material (e.g., knotting, splicing):**
This subclass is indented under subclass 470. Subject matter in which a trailing end of the material on the take-up is attached to the leading end of a supply material.
- 475.2 On carriage movable between plural winding stations:**
This subclass is indented under subclass 475.1. Subject matter in which there are plural take-ups (i.e., winding stations) and a joining mechanism for attaching the end of the take-up material to the supply material is movable between and services the winding stations.
- 475.3 Plural winding stations movable to fixed position joining means:**
This subclass is indented under subclass 475.1. Subject matter in which there are plural take-ups (i.e., winding stations) moveable to a single stationary joining mechanism for attaching the take-up material to the supply material.
- 475.4 Including particular joining structure or control:**
This subclass is indented under subclass 475.1. Subject matter in which particular significance is attributed to a mechanism for performing or system for controlling the attaching of the ends of the material.
- 475.5 Including inspection or detection of material ends or of joined ends:**
This subclass is indented under subclass 475.1. Subject matter including structure or process for determining a condition or the presence of the ends of the material to be attached or of the attached ends.
- 475.6 Including particular material end transfer to joining means:**
This subclass is indented under subclass 475.1. Subject matter in which particular significance is attributed to a mechanism or process for associating the material ends with a structure for attaching the ends.
- 475.7 Including positioning of material outer end on wound package:**
This subclass is indented under subclass 470. Subject matter including means to situate a trailing portion of the elongated material associated with a wound package at a predetermined point particularly convenient for subsequent unwinding.
- 475.8 Including outer end removal and repositioning on package:**
This subclass is indented under subclass 475.7. Subject matter wherein the means to locate the trailing portion is further adapted to place an end of the portion at a predetermined point on the wound package.
- 475.9 Inserting material end within package:**
This subclass is indented under subclass 475.8. Subject matter wherein the predetermined point of placement of the material end is interior of the wound package.
- 476 Material outer end removed from package:**
This subclass is indented under subclass 470. Subject matter comprising means to accept a helically or randomly wound package for locating and withdrawing a trailing portion of the elongated material wound on the package.
- (1) Note. Included in this subclass are apparatus and processes for locating and separating an end portion of material from a package when breakage of the material occurs during winding of the package.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 475.5, for a material end joining apparatus having means to detect the ends.
- 475.8, for locating and removing the end of a wound package and relocating it on the package.
- 562, for an unwinding device or process in which the leading end of material in a package is located and separated from the package.

476.1 Including particular material to spool connection:

This subclass is indented under subclass 470. Subject matter including starter means associated with the winding station to cause an initial end of the elongated material to be joined with the take-up member as a requisite to winding the material onto the take-up member.

476.2 By separate preliminary wind:

This subclass is indented under subclass 476.1. Subject matter wherein the starter means is adapted to: (1) introduce an end of the elongated material to the take-up member, and (2) facilitate an initial winding of a comparatively short length of material prior to winding a primary coil.

476.3 Preliminary wind overwraps material end:

This subclass is indented under subclass 476.2. Subject matter wherein the starter means directs initial winding in a manner to cover the end of the elongated material first introduced to the take-up member.

476.4 Prior to material introduction to traverse guide:

This subclass is indented under subclass 476.2. Subject matter wherein the starter means, in addition to introducing the end of the material to the take-up and facilitating a preliminary wind, subsequently directs the elongated material to a guide which distributes the material in a predetermined pattern during winding of the primary coil.

476.5 Including particular material end gripper:

This subclass is indented under subclass 476.4. Subject matter wherein special significance is attributed to a component of the starter means that causes the initial end of the elongated material to be captured by the take-up member.

476.6 Including particular material end gripper:

This subclass is indented under subclass 476.1. Subject matter wherein special significance is attributed to a component of the starter means that causes the initial end of the elongated material to be captured by the take-up member.

476.7 Distributing material along the package:

This subclass is indented under subclass 470. Subject matter wherein the winding station includes material traversing means for systematically shifting the point where the material meets the take-up member (i.e., the winding point), typically in reversely directed back and forth strokes generally parallel to the axis of the take-up member, to orderly accumulate convolutions of material on the take-up member.

- (1) Note. Material distribution is achieved by relatively shifting either or both the material supply (e.g., a guide) and the take-up member during winding to vary the point of winding along the take-up member. By this shifting, the winding point on the take-up member can be repeatedly traversed in opposite, back and forth directions, typically in a reciprocating or oscillating motion parallel to the winding axis. A high ratio of traverse relative to rotation creates widely spaced convolutions useful in axial unwinding (e.g., for a weaving shuttle), whereas a low traverse/rotation rate is useful to create adjacent convolutions (e.g., for high volume, compact material storage).

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, for a mechanism for moving a traverse guide.

476.8 High frequency, low amplitude traverse superposed on low frequency high amplitude traverse:

This subclass is indented under subclass 476.7. Subject matter in which the movement of the point of intersection of the material and the winding surface of the take-up is a superposition of two axial motions: (1) a low amplitude, relatively high frequency movement and (2) a high amplitude (e.g., the full length of the take-up), low frequency movement.

476.9 Rotating take-up having radially movable guide:

This subclass is indented under subclass 476.7. Subject matter in which the take-up rotates to wind material onto it and the material is

directed to the take-up by a guide that moves radially outwardly of the take-up as it is filled with material to accommodate the increasing diameter of the wound material.

477 Material guide pressed against wound package:

This subclass is indented under subclass 476.9. Subject matter in which the guide is pressed against the outer surface of the material on the take-up and slides against or is driven by contact with the take-up.

- (1) Note. The inclusion of a grooved traverse and driving roller in contact with the package is not sufficient to meet this definition.

477.1 Preventing package end ridge:

This subclass is indented under subclass 476.7. Subject matter wherein the traversing means includes structure to impose a variation in the back and forth strokes as the point of winding nears the end of a stroke in order to prevent an undesired and disproportionate build up of material near ends of the take-up.

477.2 By shifting the traversing stroke of guide:

This subclass is indented under subclass 477.1. Subject matter wherein the traversing means includes a material directing member adapted to be reciprocated or oscillated along a path to provide the back and forth material distributing strokes, and in which the imposed variation to the strokes to prevent an end ridge act to deviate the path of movement of the material directing member when the member is at or near the end of a stroke.

477.3 By varying the traversing speed of guide:

This subclass is indented under subclass 477.1. Subject matter wherein the traversing means includes a material directing member adapted to be reciprocated or oscillated along a path at a rate of speed to provide the back and forth material distributing strokes, and in which the imposed variation to the strokes to prevent the windings from forming an end ridge acts to change the speed of the material directing member near the end of a stroke.

477.4 Preventing superposed convolutions in successively wound layers (i.e., ribbon breaker):

This subclass is indented under subclass 476.7. Subject matter wherein the traversing means includes regulating structure to distribute the material in the manner to preclude convolutions in one layer from being distributed in a pattern exactly duplicating the pattern of a closely preceding layer.

477.5 By control of guide:

This subclass is indented under subclass 477.4. Subject matter wherein the winding station includes a guide for directing material to the take-up member and the regulating structure acts upon the guide to preclude convolutions in one layer from being distributed in a pattern exactly duplicating the pattern of a closely preceding layer.

477.6 Guide traverse speed:

This subclass is indented under subclass 477.5. Subject matter wherein the regulating structure acts to control the rate of movement of the guide.

477.7 By control of take-up:

This subclass is indented under subclass 477.4. Subject matter wherein the regulating structure acts on the package to preclude convolutions in one layer from being distributed in a pattern exactly duplicating the pattern of a closely preceding layer.

477.8 Take-up rotational speed:

This subclass is indented under subclass 477.7. Subject matter wherein the regulating structure acts on the package by regulating the rate at which the package turns.

477.9 Traverse speed dependent on direction of motion:

This subclass is indented under subclass 476.7. Subject matter in which the speed of the traverse mechanism traveling in one direction along the axis of the take-up is different from its speed when traveling in the opposite direction.

- 478 Forming symmetrical layer:**
This subclass is indented under subclass 476.7. Subject matter in which the motions of traverse mechanism and the take-up are timed such that each layer of material is laid immediately beside the material at the same axial point in the last layer that was traversed in the same direction (i.e., the next to the last layer).
- 478.1 Stepwise (i.e., orthocyclic):**
This subclass is indented under subclass 476.7. Subject matter in which the traverse mechanism places the material on the take-up so that substantially the entire extent of each convolution lies in a plane perpendicular to the axis of rotation of the take-up and a small portion of each convolution deviates from the plane to join the adjacent convolution.
- 478.2 With distribution monitor and correction or indication:**
This subclass is indented under subclass 476.7. Subject matter in which improper distribution of material on the take-up or a condition directly related to it (e.g., material tension) is detected and (1) the movement of the traverse mechanism is adjusted or (2) an indicating signal is generated in response to the detection.
- (1) Note. Sensing of tension in itself does not constitute detecting improper distribution of material. The apparatus must be configured so that the guiding of the material and sensing of tension provide an indication of the material distribution.
- 478.3 By relatively reciprocating ring rail having an orbital guide:**
This subclass is indented under subclass 476.7. Subject matter in which the traversing mechanism includes (1) a circular trackway that reciprocates relative to the take-up parallel to its axis and (2) a guide constrained to slide along the trackway for engaging and causing the shifting of the material along the take-up.
- 478.4 Long traverse stroke (e.g., warp wind):**
This subclass is indented under subclass 478.3. Subject matter in which the stroke of circular trackway relative to the take-up is substantially the length of the take-up.
- 478.5 Guide stroke limit shifted along package:**
This subclass is indented under subclass 478.4. Subject matter in which a limit of the stroke of the circular trackway is shifted axially relative to the take-up as the material is wound.
- 478.6 Short traverse stroke shifted along package (e.g., weft wind):**
This subclass is indented under subclass 478.3. Subject matter in which the stroke of the traverse mechanism is relatively short compared to the length of the take-up and the limits of the stroke are shifted along the take-up as the material is wound.
- 478.7 Including forming an initial reserve coil:**
This subclass is indented under subclass 478.6. Subject matter in which the traverse mechanism operates to initially wind a reserve coil of material of relatively short length onto the take-up before winding the rest of the material onto the take-up.
- 478.8 By control of traverse:**
This subclass is indented under subclass 478.7. Subject matter in which the traverse mechanism operates in one mode to form the reserve coil and another mode to form the rest of the package.
- 478.9 By use of auxiliary cam:**
This subclass is indented under subclass 478.8. Subject matter in which the traverse mechanism includes a cam mechanism for shifting the material to form the reserve coil that is unused during operation of the traverse mechanism during winding of the rest of the material on the take-up.
- 479 Including varying rate of shifting of stroke limits:**
This subclass is indented under subclass 478.8. Subject matter in which the traverse mechanism includes means to vary the operation of the portion of the mechanism that is responsible for shifting the limits of the traverse stroke along the take-up.
- 479.1 Including varying of stroke length:**
This subclass is indented under subclass 478.8. Subject matter in which the length of the stroke of the traverse is varied as the material subsequent to the reserve coil is wound.

479.2 By progressive shifting of constant traverse stroke:

This subclass is indented under subclass 476.7. Subject matter in which the positions of the ends of the stroke of the traverse mechanism are moved in one direction relative to the take-up as the material is wound onto the take-up substantially from the beginning of winding of a package to completion while the length of the stroke remains constant.

479.3 Long traverse stroke (e.g., bobbin tapered at both ends):

This subclass is indented under subclass 479.2. Subject matter in which the length of the stroke of the traverse mechanism is substantially equal to the length of the finished package exclusive of any distinct (e.g., tapered) end portions.

479.4 On bobbin having cylindrical and frusto-conical portions:

This subclass is indented under subclass 479.3. Subject matter in which the material-contacting surface of the take-up has a portion that is a portion of a cone and a portion that is a cylinder.

479.5 Short traverse stroke:

This subclass is indented under subclass 479.2. Subject matter in which the length of the stroke is relatively short compared to the length of the take-up.

SEE OR SEARCH THIS CLASS, SUBCLASS:

484, for a take-up moveable to distribute material along the take-up.

479.6 Guide stroke moves progressively along axially stationary package:

This subclass is indented under subclass 479.5. Subject matter in which the position of the take-up in its axial direction is fixed and the limits of the traverse stroke move to create the relative movement between take-up and traverse stroke limits as the material is wound.

479.7 Having progression roller engaging package periphery:

This subclass is indented under subclass 479.6. Subject matter in which the traverse limits are determined by the position of a moveable roller

and in which the roller (1) is engageable with accumulating material on the take-up when the radius of the material reaches a certain point and (2) is shifted along the take-up due to contact with the accumulating material thereby shifting the limits of the traverse stroke.

- (1) Note. The progression roller acts as a sensor of the location of current end of the material package being formed. Typically, the roller is threaded to a stationary threaded shaft or fixed to a rotatable threaded shaft mounted in a threaded support. The shaft is parallel to the axis of the take-up. The roller is maintained at a fixed distance from the axis of the take-up. When the package radius increases to contact the roller, the roller rotates and shifts axially of the take-up until it no longer contacts the package, thus following the end of the finished portion of the package.

479.8 Including formation of an initial reserve coil:

This subclass is indented under subclass 479.5. Subject matter in which the traverse mechanism operates to initially wind a reserve coil of material of relatively short length onto the take-up before winding the rest of the material.

479.9 Including material controlled stop:

This subclass is indented under subclass 479.5. Subject matter in which a condition of the material is detected and the winding of the material is discontinued in response to such detection.

- (1) Note. The detected condition may be the presence of imperfections in the material, excessive tension in the material, material breakage or exhaustion, halting of material motion, or completion of winding of a package.

480 Break or exhaust responsive:

This subclass is indented under subclass 479.9. Subject matter in which the condition detected is breakage, exhaustion, or stoppage of the material supply or excessive tension in the material.

480.1 Wound material sensor:

This subclass is indented under subclass 479.9. Subject matter in which the winding of the material is automatically stopped when the package of material formed on the take-up reaches a predetermined size.

480.2 Forming plural wound packages:

This subclass is indented under subclass 479.5. Subject matter in which winding is performed on a plurality of take-ups simultaneously.

480.3 Including particular presser or shaper for package as it is wound:

This subclass is indented under subclass 479.5. Subject matter including rollers for pressing and shaping the package of material formed on the take-up.

480.4 Progressive variation of guide stroke length (e.g., at least one end of package tapered):

This subclass is indented under subclass 476.7. Subject matter in which the length of the stroke of the traverse mechanism is varied as the material is wound on the take-up.

- (1) Note. A package formed by apparatus or processes under this definition typically has at least one tapered end or is formed on a take-up having one or more tapered ends.

480.5 By lever guided in inclined rail:

This subclass is indented under subclass 480.4. Subject matter in which the traverse mechanism includes (1) a track angularly adjustably mounted with respect to the axis of the take-up, (2) a lever one point of which is constrained to move along the track (3) a guide mounted on the lever spaced from the track-guided point that engages the material to cause the shifting of the material along the axis of the take-up, and (4) a drive structure reciprocal parallel to the rotational axis of the take-up to which the lever is pivotally connected at a point spaced from the guide and the track-guided point, adjustment of the track causing variation in the limits of travel of the guide along the take-up.

480.6 By lever having variable pivot:

This subclass is indented under subclass 480.4. Subject matter in which the traverse mechanism includes (1) a lever, (2) a stationary

mounting structure adjustably connected to the lever and allowing the lever to pivot about a fixed point, (3) a guide mounted on the lever and engaging the material to shift it along the take-up, (4) drive structure connected to the lever to generate oscillation of the lever, and (5) a mechanism for adjusting the point of connection between the lever and the mounting structure; the guide, mounting structure, and drive structure being connected to the lever at different points.

480.7 On double-headed spool:

This subclass is indented under subclass 480.4. Subject matter in which the take-up has flanges at opposite ends and the material is placed on the take-up in layers in a manner such that each layer is substantially in contact with both flanges.

- (1) Note. Typical of this subclass are spoolers.

480.8 Manually adjustable traverse:

This subclass is indented under subclass 476.7. Subject matter in which the traverse mechanism is constructed so that a characteristic of it may be readily changed under the control of an attendant or operator.

- (1) Note. The characteristic of the traverse mechanism of a winding device of this subclass may be changed by changing gears in the device if it is specially designed for that purpose.

480.9 Servo-driven guide following moving pattern:

This subclass is indented under subclass 476.7. Subject matter in which the guide is driven by a mechanism including (1) a first body having a marking or feature representing a curvilinear path along the first body, (2) a sensor sensing the marking or feature and connected to the guide so as to move in manner analogous to the guide, (3) a drive producing relative motion between the first body and the sensor, and (4) a servo mechanism controlled by output of the sensor that drives the guide and the sensor and positions the sensor so as to maintain it in a substantially constant relationship to a portion of the marking.

- (1) Note. The movements of the sensor and guide need only be analogous, not exactly the same to meet this definition. The movements of the sensor and guide must be constrained such that the position of the sensor determines the position of the guide.
- 481 Using fluid (fluid motor or direct fluid action):**
This subclass is indented under subclass 476.7. Subject matter in which the material is shifted along the take-up by direct action of a fluid on it or by a guide that is either directly or indirectly driven by a fluid.
- (1) Note. The guide may be driven, for example, by direct action of a fluid on a portion of the guide or by a fluid operated piston and cylinder assembly.
- 481.1 By pneumatic jet distributor:**
This subclass is indented under subclass 481. Subject matter wherein the traverse means includes a source of pressurized gas and means to direct a stream of the pressurized gas against the material being wound in a manner to displace the winding point along the take-up member to establish a desired winding pattern.
- 481.2 Using magnetic device:**
This subclass is indented under subclass 476.7. Subject matter wherein the traverse means includes a guide for directing the elongated material to the take-up member and a source of magnetic flux for positioning the guide by the action of the magnetic flux on the guide or an element integral with it to achieve a desired winding pattern.
- (1) Note. The source of magnetic flux may be an electric motor only if the guide is integral with the rotor of the electric motor.
- 481.3 Endless loop mechanism:**
This subclass is indented under subclass 476.7. Subject matter in which the traverse mechanism includes an endless member (e.g., belt or chain) driven to move along the closed path defined by the endless member and a guide for the material either mounted on the endless member or driven by an element that is caused to reciprocate or oscillate due to contact or changing of contact with the endless member.
- (1) Note. Any element integral with the endless member is considered part of it.
- 481.4 Single guide on endless loop:**
This subclass is indented under subclass 481.3. Subject matter in which there is only a single material-engaging guide on the endless member and it is mounted on or integral with the endless member.
- 481.5 Guide strikes material from opposite sides:**
This subclass is indented under subclass 481.4. Subject matter in which the guide engages the material alternately on opposite sides depending upon the direction of motion of the guide and material along the take-up.
- 481.6 Counter moving guides (e.g., pins) striking material:**
This subclass is indented under subclass 481.3. Subject matter including a plurality of guides driven by one or more endless members and adapted to perform the following steps: (a) a first one of the guides strikes the material from one side, (b) the first guide displaces the material lengthwise of the take-up member in a first direction, (c) the first guide disengages the material, (d) a second one of the guides strikes the material from the other side, (e) the second guide displaces the material lengthwise of the take-up member in a direction opposite the first one, (f) the second guide disengages the material, and (g) repeat steps a-f.
- 481.7 Counter moving guides (e.g., pins) striking material:**
This subclass is indented under subclass 476.7. Subject matter wherein the traverse means includes plural relatively moveable material guides adapted to perform the following steps: (a) a first one of the guides strikes the material from one side, (b) the first guide displaces the material lengthwise of the take-up member in a first direction, (c) the first guide disengages the material, (d) a second one of the guides strikes the material from the other side, (e) the second guide displaces the material lengthwise of the take-up member in a direction opposite the first one, (f) the second guide disengages the material, and (g) repeat steps a-f.

- (1) Note. Typically, the traverse means provided for here includes one or more guides projecting from counter rotating wheels or drums.

481.8 By cam engaging material:

This subclass is indented under subclass 476.7. Subject matter in which the material traversing mechanism includes a rotating member having a material engaging surface configured to cause movement of the winding point along the axis of the take-up.

- (1) Note. The rotating member may be integral with or a part of the take-up.

481.9 Cam is grooved material-receiving spool:

This subclass is indented under subclass 481.8. Subject matter in which the material engaging surface is in the form of a groove on the take-up.

482 Including auxiliary structure for guiding material across cam groove intersection:

This subclass is indented under subclass 481.8. Subject matter including a guide additional to the rotating member for ensuring contact between the material and the rotating member.

482.1 Including auxiliary structure for preventing material from moving beyond ends of grooved cam:

This subclass is indented under subclass 481.8. Subject matter in which the rotating member has a groove constructed to receive and move the material and a structure is provided for preventing movement past the ends of and out of contact with the rotating member.

482.2 Wear-resistant groove structure:

This subclass is indented under subclass 481.8. Subject matter in which the material engaging surface includes the side surfaces of a groove formed in the rotating member and the rotating member includes means to reduce wear of the surface due to rubbing contact with the material.

482.3 Split drum:

This subclass is indented under subclass 481.8. Subject matter in which the rotating member includes two coaxial cylindrical members that rotate as a unit and have mutually facing ends

having surfaces that (1) deviate from a plane perpendicular to the axis of rotation, (2) are complementary in shape, and (3) are spaced along the rotational axis so as to form a passage between the cylindrical members through which the material passes as it travels from a supply to the take-up, the surfaces of the ends of the cylindrical members guiding the material in the axial direction of the take-up.

482.4 Cam-operated guide:

This subclass is indented under subclass 476.7. Subject matter including (1) a guide for the material moveable along the take-up and (2) a mechanism for generating the movement of the guide parallel to the axis of rotation of the take-up which mechanism includes two relatively moveable elements in sliding contact with each other such that the region of contact moves over the surface of at least one of the elements and the relative motion and contact between the elements compels the elements to move relative to each other with a non-rotary component.

- (1) Note. Included in this subclass, for example, are mechanisms in which (1) the guide is moved by action of a threaded shaft on a non-rotating follower connected to the guide, (2) a rotary guide having a threaded hub is supported by and moved axially along a complementarily threaded stationary shaft, or (3) a non-rotating threaded shaft (cam) is moved axially by a pawl or pin rotating about the axis of the shaft and engaging the thread of the shaft.

SEE OR SEARCH THIS CLASS, SUBCLASS:

480.9, for a mechanism for moving a guide including a sensor that follows a mark on a moving body in a manner analogous to the operation of a cam and follower.

482.5 Rotatable guide following stationary cam (e.g., guide on nut on threaded shaft):

This subclass is indented under subclass 482.4. Subject matter in which the material contacting guide is rotatable by the material and is in contact with a cam and follows it so as to move along the cam upon rotation of the guide.

482.6 Driven by cam-contacting lever:

This subclass is indented under subclass 482.4. Subject matter in which the traverse mechanism includes (1) a driven rotary member (i.e., cam), (2) a lever mounted to pivot about a fixed point, the lever engaging and sliding on a surface of the rotary member, and (3) a guide driven by the lever and engaging the material to shift it along the take-up, the rotary member, lever, and guide being so constructed and arranged that rotation of the rotary member causes the lever to oscillate about its pivot point and the guide to move along the take-up.

- (1) Note. The phrase “the lever engaging and sliding on a surface of the rotary member” is intended to include the arrangement in which a roller whose axis of rotation is fixed relative to the lever is in contact with (and may roll on) the surface of the cam.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 478.3, for a ring rail reciprocated by a cam and lever mechanism.
- 482.8, for a cam-operated guide driven by an oscillating lever that is not in direct contact with the cam.

482.7 Adjustable throw lever:

This subclass is indented under subclass 482.6. Subject matter in which the pivot point of the lever is variable during operation relative to the ends of the lever (e.g., to vary the speed or distance traveled by the guide in each cycle of oscillation of the lever).

- (1) Note. The position of the pivot point may vary during operation or between operating periods.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 480.8, for a winding distributing device having an adjustable operating characteristic.

482.8 Rotary cam and linearly shifted follower:

This subclass is indented under subclass 482.4. Subject matter in which the second element (follower) moves along a straight line as a result of rotation of the first element (cam).

- (1) Note. In this subclass, the take-up or spool may act as the rotary member or cam.
- (2) Note. To be considered a cam and follower for this subclass, (1) the follower must move along the surface of the cam, i.e., the point of contact between the cam and follower must change relative to the cam and (2) the change in position of the follower must be causally related to this change in the position of the point of contact. For example, a pin rotating about an axis transverse to the length of the pin and extending radially of a non-rotating, longitudinally-shiftable threaded shaft and engaging with the thread of the shaft is not a rotary cam and follower arrangement, but a non-rotary cam and rotating follower classifiable in the parent subclass.

482.9 Threaded cam:

This subclass is indented under subclass 482.8. Subject matter in which the surface of the rotary member engaged by the follower is a portion of a continuous helical groove or projection (i.e., thread) extending through an arc of at least 360 degrees on the rotary member, the axis of the groove or projection being oriented generally in the direction of the axis of rotation of the rotary member.

483 Grooved spool and follower:

This subclass is indented under subclass 482.9. Subject matter in which the surface engaged by the follower is a portion of a groove formed in the take-up.

483.1 Threaded cams with split nut cam followers:

This subclass is indented under subclass 482.9. Subject matter including an additional groove and an additional follower, each follower having a thread mateable with one of the grooves and operating the material guide, the threads and followers being constructed and driven so that one follower moves the guide in one direction when drivingly engaging one of the grooves of the rotary member and the other follower moves the guide in the opposite direction when drivingly engaging the other groove of the rotary member, the followers being alter-

nately engaged with the respective grooves in operation.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

483.5, for a traverse mechanism including a cam having two threads of opposite pitch on it for alternately moving a guide in opposite directions.

483.2 Having electrical switching device:

This subclass is indented under subclass 483.1. Subject matter in which an electrically operated mechanism moves the followers alternately into engagement with the grooves at the appropriate times.

483.3 Having reversible cam drive:

This subclass is indented under subclass 482.9. Subject matter in which the direction of rotation of the rotary member is periodically reversed to change the direction of the guide.

483.4 Alternately engageable drives (e.g., alternately operated clutches):

This subclass is indented under subclass 483.3. Subject matter including a drive system for the rotary member in which power is transmitted alternately through each of two different paths to the rotary member, the activation of a different path corresponding to a reversal of the direction of movement of the guide.

483.5 Reversely threaded (i.e., cam having opposite threads):

This subclass is indented under subclass 482.9. Subject matter in which the rotary member has an additional groove whose pitch is opposite to that of the first mentioned groove and that is engaged by the follower to move the guide along a portion of its travel.

483.6 Having irregularly threaded portion (e.g., forming tapered package):

This subclass is indented under subclass 483.5. Subject matter in which the groove of the rotary member includes portions having different pitches.

483.7 Details of follower:

This subclass is indented under subclass 482.8. Subject matter including details of aspects of the follower that relate to its cooperation with

the cam or the generation of its linear movement.

(1) Note. Details not related to the cooperation between the cam and follower are not sufficient to warrant placement of a document in this subclass. Examples are: the structure of a guide mounted on the follower or a linkage connecting the follower and guide.

483.8 Guide driven by rotating crank or eccentric:

This subclass is indented under subclass 476.7. Subject matter in which the guide is shifted to move the winding point by a link having an end connected to a driven element (e.g., crank) that rotates at least 360 degrees in a single direction about a substantially fixed axis such that the regions of contact between the link and drive element are substantially unvarying during operation and the end of the link orbits the rotational axis of the driven element. The connection between the link and guide may be direct or indirect.

483.9 Guide on driven oscillating lever:

This subclass is indented under subclass 476.7. Subject matter in which the shifting of the material along the take-up is accomplished by driven support oscillatable about a fixed point and a guide for the material mounted on the support so as to move the guide along the take-up.

484 By shifting spool:

This subclass is indented under subclass 476.7. Subject matter in which the material traversing means moves the take-up in the direction of its axis so as to shift the winding point of the material on the take-up.

(1) Note. The take-up may or may not rotate, e.g., material may be wound on the take-up by a flyer.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

478.3, for a ring rail material distributing device in which a ring rail and take-up reciprocate relative to each other.

484.1 Cam shifting mechanism:

This subclass is indented under subclass 484. Subject matter in which the material traversing means includes a rotating or oscillating cam cooperating with a follower so as to shift the take-up along its axis.

484.2 Self traversing (i.e., guide moved by material):

This subclass is indented under subclass 476.7. Subject matter in which the material is wound onto the take-up so that convolutions of the material on the spool tend to cause newly laid convolutions to lay next to existing ones and moveable guide means for the material that is repositioned solely by changes in the direction of a pull exerted upon it by the material passing over or through it or by other action of the winding or wound material on it to assist proper laying of the material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

478.2, for a traverse mechanism that is controlled by a system that detects the tendency of material to deviate from proper distribution on a take-up. The system may detect this tendency by sensing the position of a movable guide that directs the material onto the take-up.

482.4, for a traverse mechanism having a cam-operated guide for laying material on a take-up. The guide may be material-driven and shifted by cooperation with a threaded supporting shaft.

484.3 Toggling guide bar:

This subclass is indented under subclass 484.2. Subject matter in which the guide is mounted on a lever mounted to pivot.

484.4 Follower engaging wound material:

This subclass is indented under subclass 484.2. Subject matter including an element contacting wound material on the take-up and joined to the guide to shift the guide as the take-up is filled with material.

484.5 Traverse drive motor mounted on guide:

This subclass is indented under subclass 476.7. Subject matter in which the traversing means includes a guide for shifting the material and

means for moving the guide mounted on and moveable with the guide.

484.6 Including particular drive:

This subclass is indented under subclass 470. Subject matter including details of structure or process for supplying or controlling the supply of power for causing relative rotation of the take-up and the winding point.

SEE OR SEARCH THIS CLASS, SUBCLASS:

472.9, and 479.9, for winding-condition operated stops in doubling machines or in a winder having a shiftable-limit traverse guide.

590, and 611, for drive structure (e.g., pulley or gear) incorporated into a spool, spindle, or its support.

484.7 Associated with sewing machine drive for forming wound package for sewing machine shuttle:

This subclass is indented under subclass 484.6. Subject matter including in which the power for the take-up is supplied by a sewing machine and the take-up is a spool (commonly called a bobbin) constructed to be used to supply a thread to the sewing machine.

484.8 Having material controlled stop:

This subclass is indented under subclass 484.7. Subject matter in which a condition of the material is detected and the winding of the material is discontinued in response to such detection.

(1) Note. The detected condition may be the presence of imperfections in the material, excessive tension in the material, material breakage or exhaustion, halting of material motion, or completion of winding of a package.

484.9 Having winding state-controlled stop:

This subclass is indented under subclass 484.6. Subject matter in which a condition of the material or winding operation is detected and the winding of the material is discontinued in response to such detection.

(1) Note. The detected condition may be, for example, the presence of imperfections in the material, excessive tension in

the material, material breakage or exhaustion, halting of material motion, completion of winding of a package, or winding of a particular length of material.

SEE OR SEARCH CLASS:

- 19, Textiles: Fiber Preparation, subclasses for a fiber preparation apparatus having means for stopping the apparatus upon detection of a fault in the feeding or processing of material.
 - 28, Textiles: Manufacturing, subclass 185 for a textile manufacturing device having condition responsive means for controlling operation of the device.
 - 57, Textiles: Spinning, Twisting, and Twining, subclass 78 for condition controlled stopping mechanisms in spinning machines.
 - 66, Textiles: Knitting, subclass 157 for material controlled mechanisms for stopping knitting machinery.
 - 112, Sewing, subclass 271 for a sewing machine having a condition responsive control for starting and stopping the machine.
 - 139, Textiles: Weaving, subclass 336 for condition responsive stopping means in a weaving apparatus.
- 485 Running material sensor:**
This subclass is indented under subclass 484.9. Subject matter in which the condition of the material at a point spaced from the take-up is detected.
- 485.1 Having take-up package sensor:**
This subclass is indented under subclass 485. Subject matter in which the condition of the material on the take-up is also detected.
- 485.2 Break or exhaust responsive (absence of material):**
This subclass is indented under subclass 485. Subject matter in which the detected condition is the presence or absence of material and the winding is discontinued in response to sensing that the material is absent.

SEE OR SEARCH THIS CLASS, SUBCLASS:

479.9, for a winding device having a traverse mechanism having shiftable limits and a drive responsive to the state of the winding operation.

485.3 Separating wound package from peripheral drive drum or roll:

This subclass is indented under subclass 485.2. Subject matter in which the take-up is driven by contact of a driven roll with the periphery of the material wound on the take-up and the winding is discontinued by moving the roll out of contact with the take-up.

485.4 Thickness variation responsive:

This subclass is indented under subclass 485. Subject matter in which the detected condition is the thickness or change in thickness (at the point of detection) of the material.

485.5 Material length responsive:

This subclass is indented under subclass 485. Subject matter in which the detected condition is the passage of a predetermined length of material past a particular point.

485.6 Wound material sensor:

This subclass is indented under subclass 484.9. Subject matter in which the detected condition is the package of wound material on the take-up attaining a predetermined size.

485.7 Coil (package) diameter responsive:

This subclass is indented under subclass 485.6. Subject matter in which the detected condition is the diameter of the package.

485.8 Separating wound package from peripheral drive drum or roll:

This subclass is indented under subclass 485.7. Subject matter in which the take-up is driven by contact of a driven roll with the periphery of the material wound on the take-up and the winding is discontinued by moving the roll out of contact with the take-up.

485.9 Peripheral drive:

This subclass is indented under subclass 484.6. Subject matter in which the take-up is driven by contact of a driven surface with the periphery of the material wound on the take-up.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
485.3, for a material winder in which the take-up is driven by peripheral contact with a drive roller having a mechanism for moving the take-up out of contact with the drive roller upon detection of material breakage.
- 486 And driven spindle:**
This subclass is indented under subclass 485.9. Subject matter in which (1) the take-up includes a support central to the take-up and in driving relation with it and (2) the support is also driven.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
486.8+, for a spindle-engaging drive of general application to helical winding devices.
- 486.1 Including details of take-up-contacting drive:**
This subclass is indented under subclass 485.9. Subject matter including details of an element or elements forming the driven surface that engages the wound material.
- 486.2 Particular holder or support for spool or wound package:**
This subclass is indented under subclass 485.9. Subject matter including details of the structure of the take-up or of structure supporting the take-up.
- 486.3 Including speed control:**
This subclass is indented under subclass 485.9. Subject matter including means to automatically vary the speed of the driven surface during operation.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
486.7, for speed control of general application to helical winding apparatus.
- 486.4 Including drive pressure regulator:**
This subclass is indented under subclass 485.9. Subject matter in which a portion of the force applied to the take-up by the driven surface is generated by other than the weight associated with the driven surface or take-up or a static spring or weight acting on the driven surface or take-up.
- (1) Note. A control that varies the pressure of the driven roll on the take-up is placed in this subclass since, by definition, it cannot involve only the use of a static spring or weight.
- 486.5 Manual:**
This subclass is indented under subclass 485.9. Subject matter in which the driven surface is powered by hand.
- 486.6 Particular drive motor or motor structure:**
This subclass is indented under subclass 484.6. Subject matter including details of a device for generating the mechanical energy that produces the relative rotation between the take-up and winding point.
- 486.7 Including speed control:**
This subclass is indented under subclass 484.6. Subject matter in which the rotational speed of the take-up is changed in a preset manner or the supply of power is controlled in response to operating conditions to maintain the rotational speed of the take-up within a desired range at some point during operation.
- (1) Note. The change of the rotational speed of the take-up may take place during the winding of a single package on a take-up, from one package to the next, or in any other controlled manner.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
412, for a device in which tension is maintained in material being wound onto a take-up by controlling the speed of the take-up.
486.3, for a winder for controlling the speed of a take-up rotated by a peripheral-engaging drive.
- 486.8 Drive engages spindle:**
This subclass is indented under subclass 484.6. Subject matter in which the take-up is supported and rotated by a driven shaft coaxial with the take-up.
- (1) Note. The shaft that drives the take-up need not do so by internal contact with

the take-up. Power may be transmitted from driven shaft to a spool by an element on the shaft that is in frictional engagement with an end of the spool. The same driven shaft must extend into the spool, however.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 486, for a helical winding device having a driven spindle and a drive surface engaging the periphery of the take-up.
- 597, for holders for supporting a bobbin or spindle by contact with only one end of it and having a whirl or pulley for driving the holder and bobbin.

486.9 Manual:

This subclass is indented under subclass 486.8. Subject matter in which the driven shaft is powered by hand.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 487, for a manual drive of general application to helical winding devices.

487 Manual:

This subclass is indented under subclass 484.6. Subject matter in which the take-up is powered by hand.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 486.9, for a manually powered, spindle-engaging drive for a rotating take-up.

487.1 And severing:

This subclass is indented under subclass 470. Subject matter including a significant severing means for cutting, breaking or otherwise separating the elongated material coiled on the take-up member from a material supply.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 521, and 522+, for material severing means combined with convolute winding and subclass 911 for a cutter appropriate for a winding, guiding or tensioning device.

SEE OR SEARCH CLASS:

- 30, Cutlery, appropriate subclasses for a detail of a cutter blade, mounting, or actuator of general use.
- 83, Cutting, particularly subclass 78, 909, 924, 937, and 950 for cutting apparatus of general use including unwinding.
- 225, Severing by Tearing or Breaking, for apparatus to rip or rend material including unwinding of the material.

487.2 Tension variation responsive:

This subclass is indented under subclass 487.1. Subject matter wherein the severing means includes an operator actuated in reaction to a certain level of longitudinal stress detected in the elongated material.

487.3 Material defect responsive:

This subclass is indented under subclass 487.1. Subject matter wherein the severing means includes an operator actuated in reaction to a flaw detected in the elongated material.

- (1) Note. The defect or flaw may be detected directly as a measurement, or indirectly as the detection of a condition which is indicative of an actual or impending defect.

487.4 Coil diameter responsive:

This subclass is indented under subclass 487.1. Subject matter wherein the severing means includes an operator actuated when the material coiled about the take-up member reaches a predetermined radial dimension.

487.5 Material length responsive:

This subclass is indented under subclass 487.1. Subject matter wherein the severing means includes a detector for determining the length material wound on the take-up member and an actuator responsive to the detector for severing the material when a predetermined length has been detected.

- (1) Note. The length of material need not be directly measured by a scale nor related directly to the take-up member, but may be a turn counter, weight scale or the like providing an indication from which

wound length of material is determinable.

487.6 Severing proximate to spool:

This subclass is indented under subclass 487.1. Subject matter wherein the severing means includes a cleaving device, a portion of which is mounted on either: (a) the take-up member (e.g., a spool), or (b) a mechanism for rotating the take-up member, (e.g., a spool supporting chuck).

487.7 Particular severing device:

This subclass is indented under subclass 487.1. Subject matter wherein special significance is attributed to the construction of the severing means.

487.8 Bladeless:

This subclass is indented under subclass 487.7. Subject matter wherein the severing means separates the elongated material by breaking, burning, or similar process without reliance on a cutting edge.

487.9 Multiple blades:

This subclass is indented under subclass 487.7. Subject matter wherein the severing means includes separate cutting edges.

488 Blade and coacting anvil:

This subclass is indented under subclass 487.7. Subject matter wherein the severing means includes a cutting edge and coacting non-cutting reaction surface between which the elongated member is captured for severing.

520 CONVOLUTE WINDING OF MATERIAL:

This subclass is indented under the class definition. Apparatus or method for receiving elongated material from a supply and progressively coiling the material about an axis of a take-up to create successive convolutions so that at least the majority of convolutions lie upon their preceding convolution.

SEE OR SEARCH CLASS:

8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclasses 151+ for a winding device for moving running material with respect to a chemical treatment apparatus.

15, Brushing, Scrubbing, and General Cleaning, for a winding device combined with a brush or similar device for cleaning material as it is wound.

28, Textiles: Manufacturing, subclass 176 for warp thread sheet winding that may be analogous to convolute winding.

53, Package Making, subclass 204, 409, 587, and 588 for forming or covering a package that may include winding.

72, Metal Deforming, appropriate subclasses, particularly 135+, 146+, and 183 for coiling elongated metallic material that additionally bends the metal beyond its elastic limit.

87, Textiles: Braiding, Netting, and Lace Making, subclass 31 and 59 for a winding device combined with specific Class 87 technology.

100, Presses, subclass 76 and 79 for a process or apparatus for winding combined with pressure application.

118, Coating Apparatus, subclass 229 and 235 for winding or unwinding combined with a specified coating device

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 51+, 162, 169+, 180+, and 184+ for a process and 405.1+ and 443+ for apparatus that wind with surface bonding to form laminae.

162, Paper Making and Fiber Liberation, subclasses 118+ for a process of winding or wrapping a web formed of interfelted fibers in liquid suspension (e.g., to make a paperboard core).

493, Manufacturing Container or Tube From Paper; or Other Manufacturing From a Sheet or Web, particularly subclasses 303 through 307 for winding or wrapping of a specified sheet or web to manufacture a container or tube.

521 With tearing or breaking:

This subclass is indented under subclass 520. Subject matter comprising means adapted to cause sufficient stress in the elongated material to separate the material into plural parts at a predetermined point, after which at least one part is wound onto the take-up.

SEE OR SEARCH CLASS:

225, Severing by Tearing or Breaking, for tearing or breaking unwound or non-wound material.

522 With cutting, perforating, or notching:

This subclass is indented under subclass 520. Subject matter comprising an instrument (cutting device) to penetrate the elongated material to divide, score, or provide a permanent puncture in the material, after which at least part of the original material is wound onto the take-up.

- (1) Note. Patents proper for this and the indented subclasses should claim a significant cutter and structure for subsequently winding the cut material; however, nominal cutting followed by significant winding is provided for later in this class, whereas unwinding to cutting structure is provided for in other classes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

528+, for details of a convolute winding machine with a only a named cutter or no cutter.

SEE OR SEARCH CLASS:

83, Cutting, particularly subclasses 78+, 302, 909, 924, 937, 949, and 950 for details of a cutter for unwound or non-wound material.

523 Automated control:

This subclass is indented under subclass 522. Subject matter comprising a mechanism to apply or regulate the cutting device or elongated material at a selected point without either: (a) user intervention, or (b) operation of a device operating in a fixed cycle.

SEE OR SEARCH CLASS:

83, Cutting, particularly subclasses 72+, 76.1+, and 360+ for a control for a cutter, per se, or a cutter in a combination provided for in Class 83.

523.1 For transverse cutting:

This subclass is indented under subclass 523. Subject matter wherein the cutting device operates across or oblique to the direction of elongation of the material.

524 Sequential cutting stations:

This subclass is indented under subclass 522. Subject matter wherein a single section of elongated material is subjected to the action of either: (a) a plurality of cutting devices spaced at longitudinally discrete locations along the path of movement of the elongated material, or (b) a single cutting device moved along the length of the material and applied in succession at discrete locations.

SEE OR SEARCH CLASS:

83, Cutting, particularly subclasses 255+ and 301 for sequential cutters, per se, or combined as provided for in Class 83.

524.1 Longitudinal and transverse severing:

This subclass is indented under subclass 524. Subject matter wherein the cutting device(s) divides the elongated material along the material length and severs the material in a direction substantially across its length.

- (1) Note. The material length is taken in the direction of movement as the material progresses toward and around a winding axis, whereas transverse is substantially across or oblique to the material length.

SEE OR SEARCH CLASS:

83, Cutting, appropriate subclasses, particularly subclass 302 for transverse and slitter cutters, per se, or in combination with certain other devices.

525 Longitudinal cutting:

This subclass is indented under subclass 522. Subject matter wherein the cutting device acts on the elongated material in a direction substantially parallel to the material length.

SEE OR SEARCH CLASS:

83, Cutting, particularly subclasses 425+, 469+, and 651+ for a longitudinal cutter of general use.

525.1 Positionally related slitter and winding surface:

This subclass is indented under subclass 525. Subject matter wherein the cutting device divides the elongated material into plural strips and includes structure to maintain a predetermined spaced relationship between the cutting device and a take-up coil as the outer diameter of the coil increases during winding successive convolutions.

525.2 Slitter engages winding surface:

This subclass is indented under subclass 525.1. Subject matter wherein the cutting device acts against the material as the material winds onto the take-up.

525.3 Includes nonwound strip (e.g., trimming):

This subclass is indented under subclass 525. Subject matter wherein the cutting device divides the elongated material into plural strips, one of which is separated from a coiled part and remains uncoiled (e.g., as a trimmed scrap portion).

SEE OR SEARCH CLASS:

83, Cutting, particularly subclasses 102+ for a cutter with means to divert one product portion from another.

525.4 Perforating:

This subclass is indented under subclass 525. Subject matter wherein the cutting device is designed to puncture a thickness of the elongated material to create discrete apertures, typically to establish a predetermined tear line.

525.5 With particular slitter adjustment:

This subclass is indented under subclass 525. Subject matter wherein the cutting device includes a knife and specially significant structure for regulating either (a) spacing between the knife and elongated material, or (b) spacing of the knife with respect to another knife.

525.6 By rotary slitter disk:

This subclass is indented under subclass 525. Subject matter wherein the cutting device is formed as a substantially round, planar knife mounted for rotation and engagable with the elongated material for dividing the material into plural strips.

SEE OR SEARCH CLASS:

83, Cutting, particularly subclasses 469+ for a rotary cutter or carrier of general use.

525.7 With reactive material support surface:

This subclass is indented under subclass 525.6. Subject matter comprising particular structure to engage and brace the elongated material against detrimental deflection in an area where the knife engages the material.

526 Transverse cutting:

This subclass is indented under subclass 522. Subject matter wherein the cutting device penetrates the elongated material in a path substantially across the material length.

(1) Note. The term transverse cutting includes making an oblique or tapered cut as well as a cut made at a right angle to the material length.

526.1 Perforating or notching:

This subclass is indented under subclass 526. Subject matter wherein the cutting device is designed to cut an aperture through a thickness of the elongated material, which aperture is either: (a) surrounded by material (perforated), or (b) disposed at an edge of the material leaving portions of the original edge intact (notched).

526.2 With winding of flexible cutter:

This subclass is indented under subclass 526. Subject matter wherein the cutting device includes an elongated flexible cutter adapted to be drawn into a taut condition to sever the elongated material, and then either: (a) be wound with the elongated material on the take-up or (b) be collected on a separate holder.

(1) Note. The flexible cutter is frequently a renewable length of wire or similar material laid across the winding path to be drawn taut (a) to sever the elongated material when a first take-up is fully wound, and (b) to assist in continuing the winding by binding the new web end to a second, adjacent take-up by spirally winding over the new web end as the web is convolutely wound.

SEE OR SEARCH CLASS:

83, Cutting, appropriate subclasses, particularly subclass 56, 542, 553, and 636.

526.3 Special end forming (e.g., tapering):

This subclass is indented under subclass 526. Subject matter wherein the cutting device transversely severs the elongated material, and either itself or in combination with a noncutting device creates a fresh material end formed to facilitate a subsequent operation (e.g., a tapering or crimped end cut for attachment to a take-up device).

527 Knife shiftable to sever material:

This subclass is indented under subclass 526. Subject matter wherein the cutting device includes a knife to laterally sever the elongated material.

527.1 Within roller:

This subclass is indented under subclass 527. Subject matter wherein the knife is disposed within a rotatable, generally cylindrical or disklike member for periodic exposure for severing the elongated material.

527.2 Cut adjacent to new core:

This subclass is indented under subclass 527. Subject matter comprising means to support an unwound core adjacent to the cutting device so that cutting device can be actuated in a manner to facilitate a connection of a freshly cut material end to the unwound core.

527.3 Arcuately shiftable cutter:

This subclass is indented under subclass 527.2. Subject matter comprising means mounting the cutting device for movement in a curved path.

527.4 With anvil or cooperating cutter:

This subclass is indented under subclass 527.3. Subject matter wherein the cutting device includes either: (a) a backing structure adapted to support the material in an area where the knife severs the material, or (b) a second knife adapted to cooperate with the first-named knife to grip the material for severing.

527.5 Edge-to-edge (e.g., scissor type):

This subclass is indented under subclass 527. Subject matter wherein the cutting knife engages one side of the elongated material and progressively severs the material to the opposite side.

527.6 Rotary disk:

This subclass is indented under subclass 527.5. Subject matter wherein the knife is formed as a rotatable, substantially circular, planar member for severing the elongated material.

SEE OR SEARCH CLASS:

83, Cutting, subclasses 469+ for a disk cutter, per se, or in certain combinations.

527.7 With reactive surface (e.g., anvil):

This subclass is indented under subclass 527.5. Subject matter wherein the cutting device includes material support structure adapted to support the material in an area where the knife severs the material.

528 Of discrete sheets or articles:

This subclass is indented under subclass 520. Subject matter wherein winding is accompanied by disposing plural, distinct elements (e.g., cut lengths of material, newspapers, packets, etc.) about the winding axis, usually trapped by a succeeding wound layer.

- (1) Note. The distinct elements may be discrete nominally claimed articles carried by a length of the elongated material only to the extent that the articles jointly conform to a wound convolution and the length of material serves only as a temporary conveyance or retainer, or elongated material severed into individual lengths prior to winding, but not a homogenous length of material divided in part only (e.g., perforated).

SEE OR SEARCH CLASS:

53, Package Making, particularly subclass 430 and 118 for winding package contents, and subclasses 409, 204, 587, and 588 for forming or covering a package that may include winding.

529 Contracting or expanding spool during winding:

This subclass is indented under subclass 520. Subject matter wherein the convolutions are coiled upon a circumferential surface of the take-up, which surface is associated with structure for causing the circumference of the surface to increase or decrease during coiling.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

571+, for a radial expansible or contractile mandrel for receiving or dispensing elongated material.

530 Simultaneous winding:

This subclass is indented under subclass 520. Subject matter wherein plural, distinct elongated materials are coiled at the same time.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

330, for simultaneously wound information-bearing carriers.
 378+, for multiple windings on a spring-powered reeling device.
 388+, for multiple windings on a reeling device of general use.
 439.4+, and 443.1+, for simultaneously wound articles.
 594+, for simultaneously available supplies of elongated material.

530.1 Coaxial coils:

This subclass is indented under subclass 530. Subject matter wherein the elongated materials are simultaneously coiled about a common center line.

530.2 Superposed coils:

This subclass is indented under subclass 530.1. Subject matter wherein the elongated materials are simultaneously coiled one upon the other.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

444.1+, for superposed windings on an article (e.g., a capacitor).

530.3 Relatively rotatable coils:

This subclass is indented under subclass 530.1. Subject matter comprising means (e.g., a slip coupling or differential gearing) to particularly

facilitate rotation of one take-up with respect to another take-up, typically for accommodating material, spool, or drive rate variations.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

544+, for a variable or clutched transmission in a winding machine.

530.4 Multiple coil groups:

This subclass is indented under subclass 530.1. Subject matter wherein plural distinct sets of coaxial take-ups are provided for simultaneous winding.

531 Sequential winding stations:

This subclass is indented under subclass 520. Subject matter wherein the coiling apparatus includes discrete take-up sites at which substantially complete coils are successively wound.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

388.6, for a multiple spool or spool portion reeling device.
 440, and 445+, for sequentially winding articles.
 474.3+, for a device for helically winding alternate or successive take-ups.
 533+, for shifting a take-up from a winding position to or toward an unloading position where subsequent winding of a short trailing end section may occur.
 542+, and 542.3+, for a particular drum drive where a driven take-up coil may continuously shift during winding, at times to a discrete ending position where the take-up can complete winding of a short trailing end section.

531.1 With transitional guide:

This subclass is indented under subclass 531. Subject matter comprising a material-contacting element shiftable between plural locations to direct the material to the respective take-up sites.

532 With particular material connection to take-up:

This subclass is indented under subclass 520. Subject matter wherein the apparatus for coiling includes start-up means for introducing or

connecting a forward end of the elongated material to a take-up member.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 125+, and 579+, for particular structure adapted to make the connection of elongated material to a spool.
- 332+, for a threading device for introducing an information-bearing tape or film to a take-up.
- 562.1, for a threading means for an unwind device.

532.1 To take-up leader:

This subclass is indented under subclass 532. Subject matter wherein the start-up means includes structure adapted to introduce the forward end of the elongated material to a flexible element connected to the take-up member, which element draws the elongated material to the take-up member as winding begins.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 332.4, for a take-up leader connection means used for an information-bearing tape or film.
- 582, for a take-up with a material attachment leader.

532.2 Pneumatic assist:

This subclass is indented under subclass 532. Subject matter wherein the start-up means includes a device for creating a positive or negative air pressure to facilitate the introduction or connection of the material to the take-up member.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 332.3, for a pneumatically assisted threading arrangement for information-bearing tape or film.

532.3 Bonded (e.g., adhesive or water):

This subclass is indented under subclass 532. Subject matter wherein the forward end of the elongated material or take-up member relies on a substance adapted to cause the forward end of the elongated material to adhere to the take-up member, which substance may include water, glue, or binding tape.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 173, for adhesive adapted to retain the positions of strand convolutions in a package.
- 583, for adhesive or hook pile fabric used to facilitate the connection between an elongated material and take-up.

532.4 Material pierced by take-up component:

This subclass is indented under subclass 532. Subject matter wherein the take-up member includes a projection adapted to penetrate the elongated material either through an existing aperture or by puncturing the material.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 332.7, for means on a take-up to facilitate a connection between the take-up and a material to be wound thereon.
- 584+, for means on take-up to penetrate a material to be wound.

532.5 Clamp on take-up:

This subclass is indented under subclass 532. Subject matter comprising a clip on the take-up member arranged to grip and hold the forward end of the elongated material to the take-up member.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 125.1+, for means to attach an end of a strand to a spool.
- 332.7, for means to facilitate the attachment between the forward end of an information carrier and take-up.
- 586+, for a clamp on a take-up to grip the forward end of an elongated material to be wound.

532.6 Slotted take-up:

This subclass is indented under subclass 532. Subject matter wherein the take-up member includes structure defining a slit adapted to receive and retain the forward end of the elongated material during winding.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

332.8, for a slotted take-up member for receiving the forward end of an information-bearing carrier.

587, for an apertured take-up to facilitate a connection between the take-up member and a material to be wound thereon.

532.7 With particular threading facility:

This subclass is indented under subclass 532. Subject matter wherein the start-up means is constructed to expedite passage of the forward end of the elongated material to the take-up member (e.g., providing a distinctively efficient introductory path, access, or advancement mode).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

332+, for means to facilitate threading of an information-bearing carrier to a take-up member.

562.1, for means to facilitate threading of an unwinding material.

533 With spool loading or coil removal:

This subclass is indented under subclass 520. Subject matter wherein the coiling apparatus includes a take-up station and tending mechanism particularly designed to either: (a) furnish an empty spool to the take-up station, or (b) remove a filled spool from the take-up station.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

473.5+, for removing full and supplying empty bobbins to a strand winding station.

558+, for supply coil replenishment at an unwinding station.

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, subclass 159 for apparatus for repositioning take-up cans relative to a sliver coiling station.

57, Textiles: Spinning, Twisting, and Twining, subclasses 266+ for loading (donning) or unloading (doffing) an

empty core or wound package in a spinning machine.

118, Coating Apparatus, subclass 229 for stripping a yarn spool for a spindle of a coating apparatus.

211, Supports: Racks, subclasses 1.52+ for article transfer means associated with a generalized support or rack.

414, Material or Article Handling, subclass 911 for details of material handling apparatus that may be appropriate to a core and coil loading.

533.1 With particular spool supply hopper:

This subclass is indented under subclass 533. Subject matter wherein the tending mechanism includes structure for temporarily storing empty spools and sequentially releasing a spool to the take-up station.

533.2 Pivotal transfer device:

This subclass is indented under subclass 533. Subject matter wherein the tending mechanism includes a transport member arcuately movable about an axis to convey a spool between the take-up station and either: (a) an empty spool supply station, or (b) a coil deposit station.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

542.3, for means to steer a coil during winding.

559.1+, for means to arcuately transfer a supply coil relative to an unwinding station.

533.3 Peripheral coil support:

This subclass is indented under subclass 533.2. Subject matter wherein the arcuately movable transport member of the tending mechanism is designed to bear the outer circumference of the coil.

533.4 Turret:

This subclass is indented under subclass 533.2. Subject matter wherein the arcuately movable transport member comprises a rotary carrier having multiple spool support portions incrementally shiftable between the take-up station and either the supply or deposit station.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

474.5+, for a turret in a strand-winding machine.

559.2, for an indexed turret for conveying a supply coil relative to an unwinding station.

SEE OR SEARCH CLASS:

82, Turning, subclass 159 for a rotatable turret for selectively moving lathe tools to an operating position.

533.5 With particular turret indexer:

This subclass is indented under subclass 533.4. Subject matter wherein special significance is attributed to means for causing or controlling the incremental shifting of the rotary carrier.

533.6 With particular winding drive:

This subclass is indented under subclass 533.4. Subject matter wherein special significance is attributed to apparatus for causing or controlling coiling of material on a spool at the take-up station.

533.7 Axially shifted transfer device:

This subclass is indented under subclass 533. Subject matter wherein the tending mechanism includes a transport member linearly movable in a direction parallel to or coaxial with the coiling axis to convey a spool between the take-up station and either: (a) an empty spool supply station, or (b) a coil deposit station.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

559, 559.3, and 559.4, for means to shift a supply with respect to an unwinding station.

SEE OR SEARCH CLASS:

29, Metal Working, subclass 244 for a general apparatus employing force-applying means to assemble or disassemble elements in a telescoping relationship in a manner that may be analogous to loading or unloading spools from a mandrel.

533.8 Mobile carrier (e.g., wheeled vehicle):

This subclass is indented under subclass 533. Subject matter wherein the tending mechanism includes a spool conveyance adapted to transport a spool or wound coil along a random path between the take-up station and a location remote from the take-up station.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

403+, for a mobile carrier for a reeling device.

557, for a mobile carrier adapted to convey a coil with respect to an unwinding station.

SEE OR SEARCH CLASS:

223, Apparel Apparatus, subclasses 106+ for a rack, stand, or similar carrier adapted to hold sewing articles that may include a spool.

414, Material or Article Handling, subclass 911 for details of material handling apparatus that may be appropriate to core and coil loading.

534 Detector, control, or material responsive stop:

This subclass is indented under subclass 520. Subject matter wherein the apparatus includes a device to monitor a condition of the coiling operation for issuing a regulating, alarm, indication, or halt signal.

(1) Note. A quantitative control as well as an alarm or stop is found here unless provided for earlier (e.g., as a tensioning or cutting control); however, a tension-triggered mechanism to simply halt winding (e.g., during a material jam or supply exhaust) is placed here.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

333+, for a device for detecting a need and causing a halt of winding or a reversal of the winding direction of a magnetic tape or photos:graphic film winding or unwinding device.

334+, for a device for detecting and controlling the speed of a magnetic tape or photos:graphic film.

- 410+, for a detector combined with a control for tensioning.
- 523+, for a detector in a control for a cutter in a convolute winding machine.

SEE OR SEARCH CLASS:

- 250, Radiant Energy, for a detail of a photoelectric device, per se, or in combination with generalized structure, particularly subclasses 200+ and 559.01+.
- 271, Sheet Feeding or Delivering, subclasses 226+ and 256+ for alignment and stopping sheet feeding that may be analogous to a corresponding operation in winding.
- 318, Electricity: Motive Power Systems, for a control device for an electrical device including a motor or brake of general use, particularly subclass 6, 7, and 362+.
- 356, Optics: Measuring and Testing, particularly subclasses 238.1+ for a detector or stop combined with optical measuring or inspection.
- 700, Data Processing: Generic Control Systems or Specific Applications, particularly subclass 126 and subclasses 213-244 for article handling and distribution control that may include winding.

534.1 Responsive to material path:

This subclass is indented under subclass 534. Subject matter wherein the monitoring device is actuated in response to deviation of the material from a desired course.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 563.1, for a detector responsive to the unwinding path of a material.

534.2 Responsive to material length:

This subclass is indented under subclass 534. Subject matter wherein the monitoring device senses the amount of material either: (a) retained by the supply, or (b) wound on the take-up.

- (1) Note. The length determination may be determined as a factor of other physical characteristics (e.g., weight or diameter).

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 390.1, for a material length stop in a motor-driven reeling device.
- 564.1, for a detector responsive to length in an unwinding machine.

SEE OR SEARCH CLASS:

- 192, Clutches and Power-Stop Control, subclass 125 for a material control stop, per se, or general use.
- 254, Implements or Apparatus for Applying Pushing or Pulling Force, subclass 276 for a drive mechanism under the control of a turn counter of a hoist or winch drum.
- 312, Supports: Cabinet Structure, especially subclasses 34.13 through 34.21 for a particular cabinet structure designed to support a rolled material under the control of means to limit or stop winding or unwinding.

535

With feeder:

This subclass is indented under subclass 520. Subject matter wherein the coiling apparatus includes a mechanism to react against and longitudinally advance successive segments of the elongated material along a path toward a winding station.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 272, for a feeder in a fishing reel.
- 352.2, and 354+, for a feeder for winding an information-bearing carrier.
- 418+, for a feeder used to control tension in an elongated material.
- 564.3+, for a feeder in an unwinding device.

SEE OR SEARCH CLASS:

- 40, Card, Picture, or Sign Exhibiting, particularly subclasses 385+ and 446+ for advancing means of exhibit medium.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 422+ for feeding apparatus combined with surface bonding.
- 178, Telegraphy, subclass 42 for a feeder combined with a specified recorder or printer of a telegraph system.

- 226, Advancing Material of Indeterminate Length, for a feeder subcombination or in general combinations.
- 235, Registers, subclasses 475+ for a feed mechanism combined with register construction.
- 271, Sheet Feeding or Delivering, subclasses 8.1+ for details of feeding sheets.
- 396, Photography, particularly subclasses 387+ for film-feeding with winding in camera.
- 400, Typewriting Machines, particularly subclasses 578+ for a web-feeding mechanism combined with specified typewriter structure.
- 462, Books, Strips, and Leaves for Manifolding, for advancing a strip combined with joining or separating strips.
- 535.1 Deflecting material into coil (e.g., coreless coiling):**
This subclass is indented under subclass 535. Subject matter wherein the material advancing mechanism acts further to either: (a) simultaneously bend the material about a coiling axis as the material is being advanced, or (b) advance the elongated material toward an associated device that so bends the material.
- (1) Note. This subclass collects documents that curl the elongated material into a coil rather than draw the material tightly about a spindle by turning the spindle or orbital wrapping guide.
- 535.2 Variable or intermittent:**
This subclass is indented under subclass 535. Subject matter wherein the material advancing mechanism includes a regulator for either: (a) providing different rates of material advancement, or (b) controlling an operating cycle that includes periods of advancement with a selected dwell period.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
331+, for an intermediate storage arrangement for an information-bearing carrier that may include an intermittent feeder to regulate storage.
- 417, for a reserve loop former that may include an intermittent feeder to regulate the loop.
- 535.3 Driven with take-up or supply:**
This subclass is indented under subclass 535. Subject matter wherein the material advancing mechanism includes means coupled to a take-up or supply coil driver.
- 535.4 Endless belt or chain:**
This subclass is indented under subclass 535. Subject matter wherein the material advancing mechanism includes an elongated, closed loop element for engaging and advancing the elongated material.
- 535.5 Special surface (e.g., toothed):**
This subclass is indented under subclass 535. Subject matter wherein the material advancing mechanism includes a material engaging component to which particular significance is attributed.
- 536 Winding spaced-apart convolutions:**
This subclass is indented under subclass 520. Subject matter wherein the coiling apparatus winds the elongated material in such a way as to maintain clearance between successive turns (e.g., by inserting spacers between turns during winding, or by winding on a take-up with radial steps or other similar spacer structure).
- SEE OR SEARCH THIS CLASS, SUBCLASS:
602+, for a spool with a convolution separator.
- 537 Irregularly shaped take-up:**
This subclass is indented under subclass 520. Subject matter wherein the coiling apparatus is particularly adapted for winding onto a body having a shape materially varying from either: (a) a right cylindrical, longitudinal form, and (b) a circular or squared lateral form.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
437+, for apparatus for forming an article by winding material on an irregularly-shaped core.
472.5, for a device for winding material onto a take-up from which is subsequently removed as a wound package, the

take-up typically consisting of a pair of parallel, spaced rods or pins, and the resulting package being elongated.
472.7, for strand winding on a card, board, or form that is frequently flattened.

538 With coiled supply:

This subclass is indented under subclass 520. Subject matter wherein the supply is an unwinding coil adapted to furnish material to a winding take-up coil.

- (1) Note. While significant spacing between distinct supply and take-up coils is typical, the coils may be closely concentric, as in a coil tightener where relatively loose convolutions of a supply coil are constricted to an inner take-up coil.

SEE OR SEARCH THIS CLASS, SUBCLASS:

324+, for information convertible carrier winding and unwinding that typically include both supply and take-up coils.

SEE OR SEARCH CLASS:

- 38, Textiles: Ironing or Smoothing, subclass 102.21 for winding and unwinding spools with an intermediate stretching station.
40, Card, Picture, or Sign Exhibiting, subclasses 385+ and 446+ for unwinding from a coiled supply.
312, Supports: Cabinet Structure, especially subclass 34.6 and 34.11+ for particular cabinet structure designed to support a supply and a take-up roll for toweling and the like.
396, Photography, appropriate subclasses and particularly subclasses 387+ for a camera structure with winding, feeding, or tensioning film from a coiled supply in a camera.
400, Typewriting Machines, particularly subclass 242, 512, 609+, and 613+ for mounting means for a spool or roll, and subclasses 578+ for a web-feeding mechanism combined with specified typewriter structure.

538.1 Coordinated drive of supply and take-up coils:

This subclass is indented under subclass 538. Subject matter comprising a mechanism to correlate rotation of the supply and take-up coils.

538.2 With intermediate access station:

This subclass is indented under subclass 538. Subject matter comprising means to support the supply and take-up coils in a spaced relation with a portion of the elongated material extending between the coils.

- (1) Note. This and the indented subclass provide for winding plus unwinding in combination with a general utility guide path where the material may be exposed with or without contact to a utilization area. However, extreme care should be used to avoid reliance on this area to provide for original placement of any of the following: (a) claimed modification of the elongated material (e.g., dyeing, sewing, deforming, laminating, etc.), (b) acting on the material (e.g., cleaning, stretching, marking, printing, etc.), or (c) combining the guide path with apparatus or a method step provided for elsewhere (e.g., light control, photos:graphic reproduction, display optics, measuring, or testing).

538.3 Enclosed housing for coils:

This subclass is indented under subclass 538.2. Subject matter comprising an enclosure or coupled enclosure sections for covering both the supply and take-up coils.

538.4 Light occludent construction (e.g., light sensitive film holder):

This subclass is indented under subclass 538. Subject matter comprising an enclosure for each or both of the supply and take-up coils specifically fabricated to block out detrimental light rays.

539 With particular frame:

This subclass is indented under subclass 520. Subject matter wherein special significance is attributed to means for supporting, enclosing, or shielding the take-up or elongated material.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 310, for a particular frame for a fishing reel.
- 358+, for a particular frame for an information convertible winding/unwinding device (e.g., tape player/recorder or film projector).
- 379+, for a particular frame in a spring reel.
- 398+, for a particular frame for a reeling device.

SEE OR SEARCH CLASS:

- 312, Supports: Cabinet Structure, especially subclass 34.6 and 34.8+ for a particular cabinet structure designed to support rolled toweling and the like.

540 With particular drive:

This subclass is indented under subclass 520. Subject matter wherein special significance is attributed to a mechanism for transmitting torque from a power input to the take-up to cause winding.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 249+, for a particular drive in a fishing reel.
- 349+, for a particular drive in a winding/unwinding machine for a machine-convertible information carrier.
- 389+, for a particular drive in a reeling device.
- 564+, for a particular drive in an unwinding device.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, for details of a transmission of general use.
- 192, Clutches and Power-Stop Control, for details of a clutch arrangement or control stop of general use.

541 Driver engages coil periphery:

This subclass is indented under subclass 540. Subject matter wherein the mechanism for transmitting torque has as its output a member to engage and rotate the outer perimeter of the take-up to cause winding.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 352.3+, for a peripheral drive for a machine convertible information carrier winding device.
- 393, for a peripheral drive for a reeling device.
- 420.1+, for a peripheral drive in a tension control device.
- 564.5, for a peripheral drive in an unwinding machine.

541.1 With spindle driver:

This subclass is indented under subclass 541. Subject matter wherein the mechanism for transmitting torque also includes a center shaft for imparting a rotary motion to the take-up.

541.2 Coreless:

This subclass is indented under subclass 541. Subject matter wherein the mechanism for transmitting torque, in addition to rotating the take-up, supports the material being wound free of center supporting or retaining structure.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 535.1, for feeding means for pushing material into a coreless coil.

541.3 Endless belt driver:

This subclass is indented under subclass 541. Subject matter wherein the output member includes a closed loop belt adapted to engage and rotate the take-up.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 352.4, for an endless belt, peripheral drive used in a tape recorder or similar winding/unwinding system.

SEE OR SEARCH CLASS:

- 474, Endless Belt Power Transmission Systems or Components, for details of a belt drive of general use.

541.4 With drive pressure regulator (e.g., nip pressure control):

This subclass is indented under subclass 541. Subject matter wherein the mechanism for transmitting torque includes means to adjust

the force with which the take-up and output member engage each other.

541.5 Coil engaging pressure element:

This subclass is indented under subclass 541.4. Subject matter wherein the means to adjust the force of engagement between the take-up and output member is adapted to shift the output member with respect to the take-up.

541.6 Fluid actuator:

This subclass is indented under subclass 541.5. Subject matter wherein the means for shifting the output member is actuated by a hydraulic or pneumatic pressure operator.

541.7 Fluid actuator:

This subclass is indented under subclass 541.4. Subject matter wherein the means to adjust the force of engagement between the take-up and output member is actuated by a hydraulic or pneumatic actuator.

542 Plural drums:

This subclass is indented under subclass 541. Subject matter wherein the motion transmitting mechanism includes multiple take-up rotating members formed as rollers.

SEE OR SEARCH CLASS:

492, Roll or Roller, for details of a roller of general use.

542.1 Driven at different speeds:

This subclass is indented under subclass 542. Subject matter wherein the motion-transmitting mechanism is adapted to establish a drive rate differential between the take-up members.

542.2 Shiftable drum:

This subclass is indented under subclass 542. Subject matter wherein one of the rotating take-up members is movable from one position to a spaced position (e.g., to accommodate buildup of the take-up during winding or facilitate removal of a completed take-up coil).

542.3 With core steering means (e.g., pivotal mounting or guide rail):

This subclass is indented under subclass 541. Subject matter comprising a structure for directing movement of a take-up spool with respect to the transmission mechanism, typically for one of the following reasons: (a) to

accommodate an increasing take-up diameter as layers of material are wound, (b) to shift the take-up to a spaced winding position permitting a second take-up to be engaged with the transmission mechanism while the preceding take-up is being completed, or (c) to shift the take-up toward a spaced winding position for convenient unloading when the winding is completed.

(1) Note. The steering means may actively move or passively direct movement of the take-up from one position to another.

542.4 Particular drum:

This subclass is indented under subclass 541. Subject matter wherein the mechanism for transmitting torque includes a drive roller and special significance is attributed to the construction or mounting of the roller.

SEE OR SEARCH CLASS:

492, Roll or Roller, for details of a roller of general use.

543 Intermittent:

This subclass is indented under subclass 540. Subject matter wherein the mechanism for transmitting torque is adapted to perform a cycle of operation that includes: (a) rotating the take-up to wind a length of material, (b) coming to a stop or dwell period during which no winding takes place, and (c) restarting to wind an additional length of material.

544 Variable speed:

This subclass is indented under subclass 540. Subject matter wherein the mechanism for transmitting torque is adapted to rotate the take-up at different angular velocities (e.g., by altering a drive input rate or drive transmission ratio) either before or during winding.

545 With clutch or releasable coupling:

This subclass is indented under subclass 540. Subject matter wherein the mechanism for transmitting torque includes a distinctive component that provides either an interruption or a limitation of torque supplied to the take-up.

SEE OR SEARCH THIS CLASS, SUBCLASS:

257+, for a disengagable clutch in a fishing reel.

394, for a releasable drive in a general utility reel.

SEE OR SEARCH CLASS:

192, Clutches and Power-Stop Control, appropriate subclasses for a clutch, clutch-brake, or power-stop control as a subcombination or of general use.

545.1 Limited torque:

This subclass is indented under subclass 545. Subject matter wherein the mechanism for transmitting torque includes a distinct component (e.g., a slip coupling) for limiting transfer of torque to the take-up.

SEE OR SEARCH THIS CLASS, SUBCLASS:

262+, for a yieldable drive coupling in a fishing reel.
356.5, for a friction coupling in a tape or film drive.
394.1, for a slip drive in a general utility reeling device.

SEE OR SEARCH CLASS:

464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, particularly subclasses 30+ for an overload release coupling in rotary shafting.

546 With particular drive input:

This subclass is indented under subclass 540. Subject matter wherein special significance is attributed to the power input of the mechanism for transmitting torque (e.g., a motor with a distinctive structure or torque characteristic).

546.1 Manual:

This subclass is indented under subclass 546. Subject matter wherein the power input of the mechanism for transmitting torque includes an initial element (e.g., a hand crank, lever, or wheel) particularly fashioned to be operated by a user.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclasses 543+ for a handle in a generalized combination or subcombination.

547 Pressure element against coil (e.g., nip pressure member):

This subclass is indented under subclass 520. Subject matter comprising means bearing against the material wound on the take-up for exerting a radial force against the wound material toward the coiling axis (e.g., to provide a compactly wound coil).

548 With particular material guide or guard:

This subclass is indented under subclass 520. Subject matter wherein particular significance is attributed to means for either: (a) directing the elongated material to the take-up along a desired path, or (b) confining the elongated material within limited variations of such a path.

SEE OR SEARCH THIS CLASS, SUBCLASS:

326.4, and 346+, for a guide in a cartridge carrying a machine convertible information carrier.
377, for a particular guide in a spring reel.
397, for a particular guide or guard in a reeling device.
566, for a particular guide or guard in an unwinding device.
615+, for a particular guide or guard for running material.

SEE OR SEARCH CLASS:

178, Telegraphy, subclass 42 for a guide combined with the recorder or printer of a telegraph system.
226, Advancing Material of Indeterminate Length, may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel-driving or reel-stopping means, etc.); subclasses 168+ for orbitally traveling material engaging surface(s) or subclass 196.1 for a passive guide combined with a material feeder.

548.1 Distributing:

This subclass is indented under subclass 548. Subject matter wherein the guide acts to vary placement of the elongated material in a direction substantially parallel to the coiling axis as the material is coiled.

- (1) Note. Variation of material placement proper for this subclass occurs continuously or at predetermined intervals during the winding of a single coil, and not solely for realignment, accommodation for various width materials, or stepping a guide between multiple winding stations.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 157.1, 241+, and 476.7+, for a device for distributing material as it is wound onto a take-up.
 241, and 273, for strand distribution in a fishing reel by shifting either a guide or the take-up.
 397.2+, for a shiftable guide in a reel of general use.
 441+, and 447+, for article winding apparatus having means to distribute the material onto a receiving core..
 542.4, for drive roller structure that may affect the material placement.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, subclasses 22+ for motion transfer structure in generalized combinations and as a subcombination.

548.2 Edge of running web:

This subclass is indented under subclass 548. Subject matter wherein the guide or guard directs a strip material having a significant width and negligible side surface (edge), which side surface is contacted or confined by the guide or guard.

548.3 Proximate coil end:

This subclass is indented under subclass 548. Subject matter wherein the guide or guard is positioned to act on the elongated material adjacent to the take-up and near one edge of the material to typically establish a desired alignment of convolutions of material.

548.4 Noncontacting (e.g., magnetic or air):

This subclass is indented under subclass 548.3. Subject matter wherein the guide or guard exerts force or influence on the elongated material while remaining substantially free of contact with the material, typically by positive

or negative air pressure or magnetomotive force against the material.

- (1) Note. This subclass accepts a guide using a noncontacting force to cause alignment of material against a solid element (e.g., a spool flange).

550

UNWINDING:

This subclass is indented under the class definition. Apparatus or method comprising an uncoiling mechanism having a support station for a supply coil of elongated material combined with one of the following: (a) attachment means to join materials from successive supply coils (e.g., to provide a continuous, uninterrupted supply of elongated material), (b) supply coil replenishing device for shifting a full supply coil or used spool relative to an unwinding station, (c) support structure for an associated backup supply coil, or (d) apparatus to separate, detect, or regulate material unwound from the supply coil.

- (1) Note. A patent directed to an unwinding support station, per se, or such a support combined with a simple guide are combined with similar winding supports, spindles and spools under the heading of coil holder provided lower in this schedule.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 410+, for an unwinding device combined with a specified brake or other device to create or regulate tension.
 531+, for reserve winding spool supports.
 532.3, 532.4, and 532.7, for lead end attachment in a winding machine.
 533+, for coil handling in a winding machine.
 534+, for a material detector and stop in a winding machine.
 570+, for a simple unwinding device such as a dispenser, spindle, or spool.

SEE OR SEARCH CLASS:

- 52, Static Structures (e.g., Buildings), particularly subclass 108 for a device for unwinding strand, web, or connected sections of a building component material.

- 83, Cutting, appropriate subclasses, particularly subclasses 78+, 302, 909, and 924 for details of a cutter for unwound or nonwound material.
- 118, Coating Apparatus, subclass 229 and 235 for winding or unwinding combined with a specified coating device.
- 312, Supports: Cabinet Structure, especially subclasses 34.8+ for a particular cabinet structure designed to support rolled toweling and the like.
- 551 With attachment to preceding material:**
This subclass is indented under subclass 550. Subject matter comprising a mechanism for splicing an expiring portion of the elongated material unwinding from the supply coil to the elongated material of a replacement coil.
- SEE OR SEARCH CLASS:
26, Textiles: Cloth Finishing, subclasses 71+ for a cloth finishing disclosure combined with a material splicer.
- 28, Textiles: Manufacturing, subclass 141 for a textile fabric splicer for warp yarns.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 504+ for a significant collection of apparatus for splicing web ends together to form a continuous web.
- 552 With accumulator:**
This subclass is indented under subclass 551. Subject matter wherein the splicing mechanism includes a storage device for receiving a reserve length of the elongated material to later serve as a temporary supply while normal unwinding is halted or slowed for splicing.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
331+, for intermediate storage between a supply and take-up coil of a machine convertible information carrier.
- 364+, for a unidirectional wind/rewind arrangement which may serve as an accumulator.
- 417+, for a reserve loop former for accumulating slack material.
- 553 With lead end modification (e.g., trimming):**
This subclass is indented under subclass 551. Subject matter wherein the splicing mechanism includes structure for forming, shaping, or cutting a forward end of the elongated material unwound from the replacement coil.
- 554 With automated control:**
This subclass is indented under subclass 551. Subject matter wherein the splicing mechanism includes means for completing a major portion of the splicing operation in response to instantaneous conditions and without intervention of a human operator.
- SEE OR SEARCH CLASS:
200, Electricity: Circuit Makers and Breakers, subclasses 61.13+ for a circuit maker/breaker specially designed for operation by a running web or strand, spool or guide.
- 554.1 Material registration:**
This subclass is indented under subclass 554. Subject matter wherein the automated control juxtaposes the respective elongated materials in a predetermined relationship in preparation for the splicing operation.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
534.1, for material alignment in a winding machine.
- 554.2 Cutting:**
This subclass is indented under subclass 554. Subject matter wherein the automated control severs one of the elongated materials.
- 554.3 Turret indexing control:**
This subclass is indented under subclass 554. Subject matter comprising a rotatable coil carrier for successively moving each supply coil to a position for unwinding, and wherein the automated control actuates the coil carrier in a predetermined relationship to expiration of the unwinding material from a preceding supply coil.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
474+, for apparatus for supplying full and removing empty supply packages

- holding material to be rewound onto a take-up in a helical winding device.
- 474.5+, for a turret associated with a strand winding machine.
- 533.4+, for a turret associated with a convolute winding machine.
- 555.5, for a turret for spliced materials being unwound.
- 554.4 Differentiated material portion (e.g., material end, tear, or signal):**
This subclass is indented under subclass 554. Subject matter wherein the automated control is adapted to detect a particular characteristic or condition in the elongated material and initiate the splicing operation in response to the characteristic or condition.
- (1) Note. The characteristic can be a control signal, a tear or other intentional or accidental imperfection in the material, while the condition can be a highly tensioned segment of material, a break, expiration of the material, or other prevailing condition, any of which initiate the start of the splice including simply stopping the unwinding so that the splice can be performed.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
534+, for a detector or stop in a winding machine.
- 554.5 Drive or brake control:**
This subclass is indented under subclass 554. Subject matter wherein the support station for the supply coil includes motion transmission apparatus or retarding means, and the automated control regulates the transmission apparatus or retarding means as a part of the splicing operation (e.g., temporarily increasing, decreasing, or interrupting unwinding).
- SEE OR SEARCH CLASS:
192, Clutches and Power-Stop Control, appropriate subclasses for a clutch, clutch-brake, or power-stop control as a subcombination or of general use.
- 554.6 Speed matching (e.g., new roll to running material):**
This subclass is indented under subclass 554.5. Subject matter wherein the automated control induces unwinding of a replacement coil or material at a rate compatible with the unwinding rate of an expiring coil or material.
- 555 Splicing running material (i.e., flying splice):**
This subclass is indented under subclass 551. Subject matter wherein the splicing mechanism joins the elongated materials as the expiring material continues to move.
- 555.1 Shift new material:**
This subclass is indented under subclass 555. Subject matter wherein the elongated material unwound from the replacement coil is moved to a location proximate to the expiring material for joining of the materials.
- 555.2 Longitudinal shift:**
This subclass is indented under subclass 555.1. Subject matter wherein the elongated material unwound from the replacement coil is moved in a direction generally parallel to the path of movement of the expiring material.
- 555.3 Between new roll and expiring material:**
This subclass is indented under subclass 555. Subject matter wherein the expiring material and material of the replacement coil are juxtaposed for splicing by relative movement between the expiring material and the replacement coil.
- 555.4 Stationary roll positions:**
This subclass is indented under subclass 555.3. Subject matter comprising distinct, spaced apart coil supporting devices disposed in a constant relationship with respect to each other.
- 555.5 Turret support for new roll:**
This subclass is indented under subclass 555.3. Subject matter comprising a rotary indexing coil carrier for supporting plural coils sequentially made available for splicing.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
474+, for apparatus for supplying full and removing empty supply packages

- holding material to be rewound onto a take-up in a helical winding device.
- 474.5+, for a turret associated with a strand winding machine.
- 533.4+, for a turret associated with a convolute winding machine.
- 554.3, for an automatic control for indexing a turret during a splicing operation.
- 555.6 With particular splicer:**
This subclass is indented under subclass 555.5. Subject matter wherein special significance is attributed to the splicing mechanism.
- 555.7 With peripheral drive:**
This subclass is indented under subclass 555.5. Subject matter comprising powered means acting on the outer circumference of a coil to rotate the coil in an unwinding direction.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
- 352.3+, for a peripheral drive for a machine convertible information carrier winding device.
- 393, for a peripheral drive for a reeling device.
- 420.1+, for a peripheral drive in a tension control device.
- 564.5, for a peripheral drive in an unwinding machine.
- 556 With particular splice means (e.g., glue or pressure):**
This subclass is indented under subclass 551. Subject matter wherein special significance is attributed to structure of the mechanism for splicing the elongated materials.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
- 555.6, for details of a splicing mechanism combined with a turret support for new coils.
- SEE OR SEARCH CLASS:
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 504+ for apparatus for end-to-end splicing of web material.
- 556.1 Adhesive tape:**
This subclass is indented under subclass 556. Subject matter wherein the splicing mechanism includes a means to apply a separate tacky strip to join the elongated materials together.
- 557 Mobile unwinding station (e.g., wheeled conveyance):**
This subclass is indented under subclass 550. Subject matter wherein the support station includes means facilitating arbitrary movement of the support station from one location to another location (e.g., skids or a conveyance hook-up assembly).
- (1) Note. This subclass is limited to a supply coil support that is either itself independently mobile or particularly adapted for attachment to a conveyance, in contrast to, (a) a movable supply coil loading structure such as a turret for repetitively acting as a component of an unwinding device, or (b) a randomly oriented coil holder, both of which are separately provided for hereafter.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
- 403+, for a mobile carrier for a reeling device.
- 533.8, for a mobile carrier for wound coils.
- SEE OR SEARCH CLASS:
- 223, Apparel Apparatus, subclasses 106+ for a rack, stand, or similar carrier adapted to hold sewing articles that may include a spool.
- 414, Material or Article Handling, subclass 911 for details of material handling apparatus that may be appropriate to a core and coil loading.
- 558 With supply coil replenishment:**
This subclass is indented under subclass 550. Subject matter wherein the uncoiling mechanism includes as a component, a replenishing device facilitating continued uncoiling by either, (a) withdrawing a used supply spool from the support station, or (b) providing a replacement coil to the support station.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

474+, for replenishing a core in a strand winding machine.

596+, 597+, and 598+, for details of the various classes of coil holders that may include structure for simply releasing or dropping a used spool.

SEE OR SEARCH CLASS:

211, Supports: Racks, subclasses 1.52+ for means to transfer articles from a generalized support or rack.

414, Material or Article Handling, subclass 911 for details of material handling apparatus that may be appropriate to a core and coil loading.

559 Supply coil transfer apparatus:

This subclass is indented under subclass 558. Subject matter wherein the replenishing device includes a transfer mechanism for shifting a replacement coil to the support station.

559.1 Arcuate transfer path:

This subclass is indented under subclass 559. Subject matter wherein the transfer mechanism includes structure radiating from a center and movable along an arcuate path about the center to shift the replacement coil.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

533.4+, for a similar transfer device used in a winding machine.

559.2 By indexed turret:

This subclass is indented under subclass 559.1. Subject matter wherein the radiating structure is adapted to carry multiple supply coils for stepwise movement about the center to successively introduce replacement coils to the support station.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

474+, for apparatus for supplying full and removing empty supply packages holding material to be rewound onto a take-up in a helical winding device.

474.5+, for a turret associated with a strand winding machine.

533.4+, for a turret associated with a convolute winding machine.

555.5, for a turret for spliced materials being unwound.

559.3 Sequential coil shifting:

This subclass is indented under subclass 559. Subject matter wherein the transfer mechanism includes means for moving the replacement coil between distinct loading, transitional, and uncoiling positions (e.g., a plunger to thrust a first coil against an intermediate coil to move a separate coil to the support station).

559.4 Coil vertically positioned:

This subclass is indented under subclass 559. Subject matter wherein the transfer mechanism is adapted to raise or lower the replacement coil to the support station.

560 Reserve coil storage:

This subclass is indented under subclass 558. Subject matter wherein the support station includes means for supporting a back-up coil made available for unwinding upon depletion of a previous supply coil (e.g., by exposing the back-up coil at a new unwinding station).

SEE OR SEARCH CLASS:

223, Apparel Apparatus, subclasses 106+ for a rack, stand, or similar carrier adapted to hold sewing articles that may include a spool.

312, Supports: Cabinet Structure, especially subclass 34.22 for a particular cabinet structure designed to support a reserve roll of elongated material.

560.1 With feeder from subsequent supply:

This subclass is indented under subclass 560. Subject matter wherein the means for supporting the back-up coil is associated with a material advancing device to present material for convenient use upon depletion of the preceding coil.

560.2 Manually shifted reserve coil:

This subclass is indented under subclass 560. Subject matter comprising coil directing structure (e.g., a guide, chute, or channel) to provide the user with means to shift the replacement coil from a reserve position to the support station.

560.3 Radially shifted:

This subclass is indented under subclass 560.2. Subject matter wherein the coil directing structure is arranged to direct movement of the replacement coil in a direction generally perpendicular to the axis about which unwinding takes place.

561 Static ramp or track:

This subclass is indented under subclass 558. Subject matter wherein the uncoiling mechanism is associated with a guide way to facilitate movement of a used spool or replacement coil relative to the support station.

562 With material end separator (e.g., doctor blade or jet):

This subclass is indented under subclass 550. Subject matter wherein the support station for a supply coil is combined with means positioned adjacent to the outer periphery of the supply coil, usually at the point where the unwinding material diverges from the coil, to expressly part unwinding material from the coil.

562.1 With threading along unwinding path:

Subject matter under 562 comprising guide means to facilitate advancement of a leading end of the elongated material from the supply coil along a desired course.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

332+, for threading means to direct the movement of an information-bearing carrier from a supply coil.

532.7, for threading means to direct an elongated material along a winding path.

563 With detector, indicator, or control:

This subclass is indented under subclass 550. Subject matter wherein the unwinding mechanism includes means for monitoring an unwinding condition and issuing an alarm, stop, or corrective signal.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

410+, for control of tension in an unwinding or winding device.

534, for a detector or stop combined with a winding device.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclasses 61.13+ for a circuit maker/breaker specially designed for operation by a running web or strand, spool or guide.

250, Radiant Energy, for a detail of a photoelectric device, per se, or in combination with generalized structure, particularly subclasses 200+ and 559.01+.

271, Sheet Feeding or Delivering, subclasses 226+ and 256+ for alignment and stopping sheet feeding that may be analogous to a corresponding operation in unwinding.

312, Supports: Cabinet Structure, especially subclasses 34.13 through 34.21 for a particular cabinet structure designed to support a rolled material under the control of means to limit or stop winding or unwinding.

318, Electricity: Motive Power Systems, for a control device for an electrical device including a motor or brake of general use, particularly subclass 6, 7, and 362+.

356, Optics: Measuring and Testing, particularly subclasses 238.1+ for a detector or stop combined with optical measuring or inspection.

462, Books, Strips, and Leaves for Manifolding, for controlling strips being joined or separated in a manifolding operation.

563.1 Unwinding path (e.g., material alignment):

This subclass is indented under subclass 563. Subject matter wherein the monitoring means is responsive to deviation of the unwinding material from a desired course.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

399.2, for an arcuately adjustable mounting for a reeling device.

534.1, for a detector responsive to an unwinding path of a winding machine.

592, for a coil holder capable of selfalignment.

563.2 Material length:

This subclass is indented under subclass 563. Subject matter wherein the monitoring means is responsive to the extent of unwinding.

- (1) Note. Measuring here need not be continuous, nor indicative of a precise length, but can be simply a determination of a physical characteristic (e.g., weight, diameter, etc.) from which length could be derived.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 309, for means to limit unwinding of a fishing reel.
333+, for means to stop or reverse unwinding or an information-bearing carrier (e.g., a tape player).
534.2, for a detector responsive to material length in a winding machine.

SEE OR SEARCH CLASS:

- 192, Clutches and Power-Stop Control, subclass 125 for a material control stop, per se, or general use.

564 With drive mechanism:

This subclass is indented under subclass 550. Subject matter wherein the support station for a supply coil includes with a mechanism to drive either: (a) the supply coil, or (b) material advancing means associated with the coil, to cause material to be unwound.

- (1) Note. The drive mechanism may include either a motor or manually actuated device that is a part of the unwinding machine and that acts directly on the coil or feeds the material extending from the coil, however, the drive mechanism does not include unwinding due solely to a pulling action on the web by (a) hand, (b) a separate, ancillary machine, or (c) random movement of the supply with a free end of the material anchored.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 249+, for a particular drive for a fishing reel.
349+, for a particular drive for winding and unwinding an information-bearing carrier.

- 390.2+, for a particular motor drive for rotating a reeling device in the unwinding direction.

- 420+, for a supply coil drive control for regulating tension.

- 540+, for a particular drive in a winding machine.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, for a transmission detail of general use.
312, Supports: Cabinet Structure, subclasses 34.11 through 34.17 for a special cabinet particularly designed for rolled material adapted to be unwound in a controlled manner.

564.1 Limited interval:

This subclass is indented under subclass 564. Subject matter wherein the drive mechanism includes means for terminating uncoiling after either: (a) a predetermined increment of time, or (b) a period sufficient to unwind a predetermined length of material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 333+, for an automated control for the drive for an information-bearing carrier.
390.1, for a length responsive stop in a motor driven reeling device.
534.2, for a length responsive detector or stop in a convolute winding machine.
563.2, for a length responsive detector or stop in an unwinding machine.

SEE OR SEARCH CLASS:

- 192, Clutches and Power-Stop Control, subclass 125 for a general use power stop responsive to length of material.
200, Electricity: Circuit Makers and Breakers, subclasses 61.13+ for a switch responsive to a condition in running material, spool, or guide.
254, Implements or Apparatus for Applying Pushing or Pulling Force, subclass 276 for a drive mechanism under the control of a turn counter of a hoist or winch drum.
312, Supports: Cabinet Structure, especially subclasses 34.13 through 34.21 for a particular cabinet structure designed to support a rolled material

under the control of means to limit or stop winding or unwinding.

564.2 Manual crank or lever:

This subclass is indented under subclass 564.1. Subject matter wherein the drive mechanism includes a user powered, rotatable or pivotable mechanical input element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 282, through 284, for a particular crank in a fishing reel.
- 350, for a manual drive in a machine convertible information system.
- 395+, for a particular manual drive in a reeling device.
- 546.1, for a manual drive in a winding machine.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, subclasses 594.1+ for a crank in general use.
- 235, Registers, subclass 5 for a manual unwinding device for tape or the like combined with register structure.
- 271, Sheet Feeding or Delivering, subclasses 8.1+ for sheet feeding that may be analogous to a corresponding operation in unwinding.

564.3 Feeder spaced from coil:

This subclass is indented under subclass 564. Subject matter wherein the drive mechanism includes an output element engaging a portion of the elongated material extending from the supply coil to induce movement of the material in an unwinding direction.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 272, for a feeder in a fishing reel.
- 352.2, and 354+, for a feeder for winding an information-bearing carrier.
- 418+, for a feeder used to control tension in an elongated material.
- 535+, for a feeder in a winding machine.

SEE OR SEARCH CLASS:

- 40, Card, Picture, or Sign Exhibiting, particularly subclasses 385+ and 446+ for advancing means of exhibit medium.

- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 422+ for feeding apparatus combined with surface bonding.

- 178, Telegraphy, subclass 42 for a feeder combined with a specified recorder or printer of a telegraph system.

- 226, Advancing Material of Indeterminate Length, for a feeder subcombination or in general combinations.

- 235, Registers, subclasses 475+ for a feed mechanism combined with register construction.

- 271, Sheet Feeding or Delivering, subclasses 8.1+ for details of feeding sheets.

- 396, Photography, particularly subclasses 387+ for film-feeding with winding in camera.

- 400, Typewriting Machines, particularly subclasses 578+ for a web-feeding mechanism combined with specified typewriter structure.

- 462, Books, Strips, and Leaves for Manifolding, for advancing a strip combined with joining or separating strips.

564.4 Roller or sprocket:

This subclass is indented under subclass 564.3. Subject matter wherein the output element is formed as a wheel-like element (e.g., a friction or toothed drum or disk).

564.5 Coil-engaging driver:

This subclass is indented under subclass 564. Subject matter wherein the drive mechanism includes means contacting an outer surface of the supply coil to rotate the coil in the unwinding direction.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 352.3+, for a peripheral drive for a machine convertible information carrier winding device.

- 393, for a peripheral drive for a reeling device.

- 420.1+, for a peripheral drive in a tension control device.

- 541+, for a peripheral drive in a winding machine.

565 With unwinding limit:

This subclass is indented under subclass 550. Subject matter wherein the supply station includes means to halt uncoiling of the material after a predetermined length of material has been dispensed, typically by creating significant resistance to cause the material to separate along its length.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 390.1, for a material length stop in a reeling device.
- 534.2, for a length responsive stop in a winding machine.
- 564.1, for an unwinding machine with a limited interval drive.

SEE OR SEARCH CLASS:

- 33, Geometrical Instruments, subclasses 713+, 734, 754, and 761+, for a sounding device or a flexible measuring tape reel.
- 192, Clutches and Power-Stop Control, subclass 125 for a material control stop, per se, or in general use.
- 200, Electricity: Circuit Makers and Breakers, subclasses 61.13+ for a circuit maker/breaker specially designed for operation by a running web or strand, spool, or guide.
- 254, Implements or Apparatus for Applying Pushing or Pulling Force, subclass 269 and 276 for a brake or drive control device responsive to the length of wound or unwound line of a winch.
- 324, Electricity: Measuring and Testing, subclasses 207.11+ for length of material measurement, per se, or in other combinations.

566 With particular guide or guard:

This subclass is indented under subclass 550. Subject matter wherein the uncoiling mechanism is associated with apparatus to either: (a) direct the elongated material from the supply coil along a desired path, or (b) confine the material to such a path.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 157+, for a strand guide.

- 326.4, and 346+, for a guide in a cartridge carrying a machine convertible information carrier.
- 377, for a guide in a spring reel.
- 397, for a guide or guard in a reeling device.
- 548+, for a guide or guard in a convolute winding device.
- 615+, for a guide or guard for running material.

SEE OR SEARCH CLASS:

- 112, Sewing, subclasses 136+ for a work manipulating guide combined with a specified sewing process or apparatus, or subclass 302 for a thread guiding or handling means combined with a specified sewing process or apparatus.
- 178, Telegraphy, subclass 42 for a guide combined with the recorder or printer of a telegraph system.
- 226, Advancing Material of Indeterminate Length, may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel driving or reel stopping means, etc.); subclasses 168+ for orbitally traveling material engaging surface(s) or subclass 196.1 for a passive guide combined with a material feeder.
- 289, Knots and Knot Tying, subclass 15 for a cord guide in a knot tying apparatus.

570 COIL HOLDER OR SUPPORT (E.G., SPINDLE, DISPENSER, OR SPOOL):

This subclass is indented under the class definition. Apparatus or method wherein particular significance is attributed to structure for supporting a coil of elongated material, which structure may include: (a) a permanent component of a winding, unwinding or reeling device about which running material is adapted to be wound or unwound, (b) an article of manufacture for temporarily carrying a coil of elongated material, or (c) a mounting structure carrying a spindle, spool, or coil.

- (1) Note. Subject matter proper for this subclass includes a coil holder: (a) usable as a permanent or semipermanent component of a winding or unwinding machine

(e.g., an expansible mandrel, spindle, or arbor), (b) usable as a permanent part of a reeling device (e.g., tape recorder, reel, winch, etc.), (c) combined with a mounting structure (e.g., dispenser, winding machine subcombination) or (d) an article of manufacture (e.g., spool, bobbin, core, card, etc.) on which an elongated material is directly wound.

- (2) Note. Subject matter proper for original placement in this subclass must be at least disclosed as: (a) being progressively wound rather than repetitively fed as in the case of a drive belt pulley, capstan, or other motion transmission or conversion mechanism, (b) having utility for storing coiled material on its structure for more than 360° distinct from a banded member (e.g., a labeled can), (c) storing the elongated material, albeit shortly, distinct from being permanently coiled as a permanent part of a wound article, such as a ball, inductance device, etc., and (d) having the capability of being removed in the same general physical form as prior to coiling, which precludes bending a material beyond its elastic limit to form shaped coils.
- (3) Note. The claiming of structure either as a component or whole electrical article (e.g., a terminal pin, pole piece, inductance, resistance, etc.) is provided for in the appropriate electrical article class.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 322, for a spool or spool shaft feature in a fishing reel.

SEE OR SEARCH CLASS:

- 40, Card, Picture, or Sign Exhibiting, particularly subclass 483, 514+, and 518+ for a coil holder with exhibiting apparatus.
- 82, Turning, subclasses 158+ for a work holder in a lathe-type environment.
- 396, Photography, particularly subclasses 511+, 597, 601, or 623 for a coil support in a camera or fluid treating apparatus.

571

Radially expansible or contractile:

This subclass is indented under subclass 570. Subject matter wherein the coil supporting structure includes a spindle or spool having shiftable means to vary an effective circumferential dimension of the supporting structure in a radial direction with respect to the coil axis, for selectively gripping or releasing an internal surface of the coiled material or spool on which the coiled material is wound while the structure remains assembled.

- (1) Note. The shiftable means may be a part of a spindle, spool, or mounted spindle that alternately expands and contracts radially to retain and release a coil or spool, and generally provides an appreciable internal grip, although some may be no more than a shiftable retainer forcefully depressed radially upon insertion of the spool or relatively movable spindle cones shifted to grip the interior of a spool or coil.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 407.1, for an expansible or contractile spool in a reeling device.

SEE OR SEARCH CLASS:

- 72, Metal Deforming, subclass 478 for an adjustable or collapsible core in coiling apparatus for deforming metal.
- 82, Turning, subclass 169 for an expandable mandrel for a turning lathe.
- 144, Woodworking, subclass 268 for a coiling device in which wood or a wood product is bent.
- 160, Flexible or Portable Closure, Partition, or Panel, subclass 263 for a flexible or portable panel having an adjustable dimension roll.
- 249, Static Molds, subclasses 178+ for an expansible or contractile core acting as an internal mold component.
- 269, Work Holders, subclasses 48.1+ for an expandable holder insertable into a work piece aperture.
- 279, Chucks or Sockets, particularly subclasses 2.01+ for an expandable chuck appropriate for general use.

- 411, Expanded, Threaded, Driven, Headed, Tool-Deformed, or Locked-Threaded Fastener, subclasses 15+ for an expanding anchor or holding device.
- 474, Endless Belt Power Transmission Systems or Components, particularly subclasses 47+ for a pulley with expansible rim means.

571.1 Inflatable bladder:

This subclass is indented under subclass 571. Subject matter wherein the shiftable means includes a flexible wall compartment for receiving pressurized fluid to vary a circumferential dimension of the spindle.

- (1) Note. Although the shiftable means of this and the indented subclass may be partially confined or act through an intermediate structure to grip a core of wound material, it should be capable of substantial expansion (e.g., a tube, ring, or sack) as opposed to a flexible gasket disposed around a piston movable in a rigid cylinder.

SEE OR SEARCH CLASS:

- 492, Roll or Roller, subclass 4 and 5 for a roll or roller with an expandable chamber.

571.2 Plural:

This subclass is indented under subclass 571.1. Subject matter wherein multiple flexible wall compartments are provided, which compartments may be independently or commonly pressured.

571.3 Spool loading responsive:

This subclass is indented under subclass 571. Subject matter wherein the shiftable means includes a portion directly operated as a result of insertion of a spool or coil onto the spindle to vary a circumferential dimension of the spindle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 597.1+, for a free end spindle with a releasable coil retainer.

571.4 Compressible or deflectable:

This subclass is indented under subclass 571.3. Subject matter wherein the shiftable means includes a spindle surface formation adapted to yield in response to insertion of a spool or coil and thereby provide a contracted surface adapted to radially contact a spool or coil.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 597.1+, for a free end spindle with a shiftable coil retainer.

571.5 Longitudinal rib:

This subclass is indented under subclass 571.4. Subject matter wherein the surface formation includes an elongated member projecting from the spindle, which member is yieldably depressed by engagement with a spool or core inserted on the spindle.

571.6 Rotation responsive:

This subclass is indented under subclass 571. Subject matter wherein the shiftable means is actuated in response to turning of the coil support structure about a center axis of the coil.

SEE OR SEARCH CLASS:

- 192, Clutches and Power-Stop Control, subclasses 74+ for an interior expanding clutch of general use.

571.7 Wedging roller or ball:

This subclass is indented under subclass 571.6. Subject matter wherein the shiftable means includes a member pivotally or rotatably shiftable in response to rotation of the spindle to create a binding action between the outer periphery of the spindle and the inner periphery of a spool or coil carried by the support structure.

SEE OR SEARCH CLASS:

- 492, Roll or Roller, subclass 21 for a wedge-type roll expander.

571.8 Axially compressed elastic mass:

This subclass is indented under subclass 571. Subject matter wherein the shiftable means includes a plug or ring of elastomeric material expanded in a radial direction with respect to a center axis of the coil when squeezed by an actuator acting parallel to the coil axis.

572 Longitudinally shiftable operator:

This subclass is indented under subclass 571. Subject matter wherein the coil supporting structure includes a spindle and the shiftable means includes an actuator movable in an axial direction (i.e., on or substantially parallel to a center axis of the coil) to vary a circumferential dimension of the spindle.

SEE OR SEARCH CLASS:

492, Roll or Roller, subclass 21 for a wedge-type roll expander.

573 Cam and follower:

This subclass is indented under subclass 572. Subject matter wherein the axially movable actuator includes either a wedgelike or lobed member or an element coactive with the member.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, particularly subclasses 567+ for a detail of a cam in general use.

573.1 Surface wedge:

This subclass is indented under subclass 573. Subject matter wherein the wedgelike or lobed member includes a longitudinally movable cam located on or very near the outer periphery of the spindle adapted to spread adjacent portions of the spindle surface and thereby vary a circumferential dimension of the spindle.

SEE OR SEARCH CLASS:

492, Roll or Roller, subclass 21 for a wedge-type roll expander.

573.2 Longitudinally spaced cams:

This subclass is indented under subclass 573. Subject matter wherein the axially movable actuator includes plural wedgelike or lobed members or coactive elements disposed at axially separated points on the movable actuator so that the member or element is shiftable in an axial direction.

573.3 Opposed:

This subclass is indented under subclass 573.2. Subject matter wherein adjacent faces of a cooperating pair of wedgelike or lobed members are inclined in opposite directions to urge

an intermediate coactive element radially when one of the members is shifted toward the other.

573.4 Separable (i.e., opposed stubs):

This subclass is indented under subclass 573.3. Subject matter wherein the cooperating pair of wedgelike or lobed members are each mounted on a support, at least one of the supports being capable of movement in opposite axial directions a distance sufficient to permit the coiled material to be loaded or removed in a radial direction from between the wedgelike or lobed members.

SEE OR SEARCH THIS CLASS, SUBCLASS:

533.7, for an axially shifted spindle in a convolute winding machine.

596.1+, and 596.4+, for a retractable, opposed stub shaft for supporting a coil.

573.5 Threaded operator:

This subclass is indented under subclass 573.3. Subject matter wherein the cooperating pair of wedgelike or lobed members are drawn toward each other by relative rotation between female and male operating elements connected by a spiral land (e.g., a nut and bolt).

573.6 Reverse thread helices:

This subclass is indented under subclass 573.5. Subject matter wherein the spiral land includes segments of reverse pitch (i.e., right and left hand threads).

573.7 Free end spindle:

This subclass is indented under subclass 573.2. Subject matter wherein the spindle is supported at one end with an opposite end clear to facilitate insertion or removal of a spool or coil.

SEE OR SEARCH THIS CLASS, SUBCLASS:

597+, for a free spindle coil support (e.g., a dispenser).

573.8 Radial wedge separates mandrel segments:

This subclass is indented under subclass 573.2. Subject matter wherein the axially movable actuator shifts a follower moved radially to spread apart associated portions of the spindle to increase its circumferential dimension.

573.9 Free end spindle:

This subclass is indented under subclass 573. Subject matter wherein the spindle is supported at one end with an opposite end clear to facilitate insertion or removal of a spool or coil.

SEE OR SEARCH THIS CLASS, SUBCLASS:

597+, for a free spindle coil support (e.g., a dispenser).

574 Shiftable linkage:

This subclass is indented under subclass 572. Subject matter wherein the shiftable means includes an axially movable input member and elongated coupling means adapted to transfer the axial movement of the input member to radial movement of a spindle surface element by which a circumferential dimension of the spindle is varied.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclasses 469+ for a control lever or linkage system of general use.

574.1 Parallelogram:

This subclass is indented under subclass 574. Subject matter wherein the elongated coupling means comprises a pair of links, both of which have opposite ends pivotally connected between parallel base and output elements to establish a quadrilateral so that axial movement of the input element shifts one of the links, base or output elements causing the links to pivot in a radial plane thereby shifting the output element radially while maintaining parallelism between the base and output elements.

574.2 Mutually pivoted (e.g., lazy tong type):

This subclass is indented under subclass 574. Subject matter wherein the elongated coupling means includes a pair of levers mutually, rotatably joined together near their midportions and separately joined near their ends to either; (a) the movable input member, or (b) another lever so that axial movement of the input member causes arcuate shifting of the levers in a radial direction to vary a circumferential dimension of the spindle.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclass 521 for a lazy tong lever or linkage element in general use.

574.3 Trapezoidal:

This subclass is indented under subclass 574. Subject matter wherein the elongated coupling means includes a pair of links inclined toward each other, each of which is pivotally connected at one end to an intermediate link and at an opposite end to a spindle component to form a quadrilateral so that movement of the input element causes the intermediate link to move radially.

574.4 Center actuated, pivoted linkage (e.g., umbrella type):

This subclass is indented under subclass 574. Subject matter wherein the elongated coupling means includes plural output levers pivoted at one end to a spindle component and having a free end shifted radially upon axial movement of the input member acting on a midportion of the output levers.

575 Transversely shiftable operator:

This subclass is indented under subclass 571. Subject matter wherein the shiftable means comprises an input member movable in a direction either: (a) perpendicular to or (b) about the coil axis, to vary a circumferential dimension of the spindle.

575.1 Split band spreader:

This subclass is indented under subclass 575. Subject matter wherein the spindle comprises a circumferentially extending, resilient surface member disposed substantially around the coil axis except for a narrow slit formed with facing edges adapted to be shifted apart by the input member.

575.2 Geared segment:

This subclass is indented under subclass 575. Subject matter wherein the movable input member includes a toothed portion operatively connected to a cooperating toothed element for varying a circumferential dimension of the spindle.

575.3 Rotatable cam or cam follower:

This subclass is indented under subclass 575. Subject matter wherein the movable input member includes either: (a) a lobed or spiral element (i.e., a cam) arcuately movable to react against a follower, or (b) a follower shiftable along a lobed or spiral element to vary a circumferential dimension of the spindle.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, particularly subclasses 567+ for a detail of a cam in general use.

575.4 Hinged mandrel segment:

This subclass is indented under subclass 575.3. Subject matter wherein the follower is movable (e.g., radially) to shift a portion of the spindle about a pivotal axis, substantially parallel to the coil axis.

575.5 Shiftable linkage:

This subclass is indented under subclass 575. Subject matter wherein the shiftable means includes an arcuately movable input member adapted to act through an elongated element to vary the circumferential dimension of the spindle.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclasses 469+ for a control lever or linkage system of general use.

576 With particular actuator or contractor:

This subclass is indented under subclass 571. Subject matter wherein special significance is attributed to either: (a) an operating mechanism for motivating the shiftable means that varies the circumferential dimension of the spindle, or (b) means to normalize the circumferential dimension of the spindle after the shiftable means has been retracted.

576.1 Fluid:

This subclass is indented under subclass 576. Subject matter wherein the operating mechanism utilizes a pressurized, flowable medium.

SEE OR SEARCH CLASS:

279, Chucks or Sockets, subclasses 2.06+ for fluid actuated, expandable chuck appropriate for general use.

577 Individually adjustable segment or spoke:

This subclass is indented under subclass 571. Subject matter wherein the coil supporting structure includes plural coil bearing portions that collectively define a coil support structure of a given circumference, at least one of which portions is shiftable to vary a circumferential dimension of the support structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

472.5, for a take-up on which material is helically and subsequently removed as a wound package, which take-up may have shiftable coil bearing portions for facilitating removal of the package.

577.1 Yieldable:

This subclass is indented under subclass 577. Subject matter wherein at least one coil supporting portion is resilient for selective, direct manual deflection or compressible to vary a circumferential dimension of the support to thereby permit insertion or removal of a coil or spool.

577.2 Variable spoke alignments:

This subclass is indented under subclass 577. Subject matter wherein the plural coil bearing portions are spaced apart and formed as elongated outwardly projecting elements for collectively supporting coiled material at an appreciable distance from the winding axis, at least one of the portions being circumferentially shiftable about the coil axis toward another of the portions to decrease a circumferential dimension of the support structure.

577.3 Bodily retractable spoke:

This subclass is indented under subclass 577. Subject matter wherein the plural portions are spaced apart and formed as elongated outwardly projecting elements for collectively supporting coiled material an appreciable distance from the winding axis, at least one of the portions being inwardly movable in its entirety to decrease a circumferential dimension of the support structure.

577.4 Linearly shiftable winding surface:

This subclass is indented under subclass 577. Subject matter wherein the plural portions are spaced apart and formed as elongated outwardly projecting devices for collectively supporting coiled material an appreciable distance from the winding axis, at least one of the portions having a coil bearing section shiftable mounted along a substantially straight path to vary a circumferential dimension of the support structure.

578 Axially adjustable:

This subclass is indented under subclass 570. Subject matter wherein the coil supporting structure includes means readily shiftable to accommodate a coil or spool of varying axial length.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

118.5, for a spool with a head adjustable along a spool axis.

578.1 Threaded operator:

This subclass is indented under subclass 578. Subject matter wherein the shiftable means includes a helical land (screw thread or cam) to either directly act on the shiftable means or serve as a variable stop toward which the shiftable means is urged.

578.2 Discrete adjustment positions:

This subclass is indented under subclass 578. Subject matter wherein the shiftable means is associated with stops defining distinct locations for the shiftable means.

578.3 Yieldable coil support:

This subclass is indented under subclass 578. Subject matter wherein the shiftable means is mounted for movement in response to coil variations (e.g., to accommodate expansion due to moisture absorption or thermal variation).

579 With material end retainer:

This subclass is indented under subclass 570. Subject matter wherein the coil holder includes means to grip the elongated material at either: (a) the outer material end to temporarily prevent unwinding of the wound material, or (b) the inner material end to insure winding when the coil holder is rotated.

- (1) Note. This and the indented subclasses provide for a spindle or spool having a significant material end retainer.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

332.7+, for an end retainer combined with winding and unwinding machine for a convertible information carrier (e.g., tape recorder or film projector).

532.4, and 532.6, for an end retainer combined with convolute winding machine.

SEE OR SEARCH CLASS:

492, Roll or Roller, subclasses 22+ for a roll or roller with a sheet edge holder.

580 Outer end:

This subclass is indented under subclass 579. Subject matter wherein the means to grip includes structure to hold a portion of the elongated material significantly trailing the leading end, typically the outer convolution of a coil.

580.1 Edge grip or barrier pair for strip material:

This subclass is indented under subclass 580. Subject matter wherein the coil holder is adapted to support web material having a width greater than its thickness, and the means to grip acts on the web material to either: (a) engage and apply a pinching force to the width of the elongated material, or (b) overlie an edge of the material to block free unwinding.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

602.3, for a spool with spiral grooves to separate coil convolutions, which grooves have walls that incidentally retain the outer coil convolution.

581 With attractor (e.g., magnet or vacuum):

This subclass is indented under subclass 579. Subject matter wherein the means to grip includes structure to draw the elongated material toward the coil holder, which structure typically relies on magnetic, molecular, pneumatic, or hydraulic force.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
332.3, for an end retainer combined with a pneumatically assisted material threading device.
532.2, for an end retainer combined with a winding machine.
- 582 Preattached flexible leader:**
This subclass is indented under subclass 579. Subject matter wherein the means to grip includes an elongated flaccid link having a first end anchored to the coil holder and a second end adapted to receive the elongated material so that the link and elongated material can be wound onto the coil holder.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
332.4, 332.7, and 332.8, for an end retainer combined with winding and unwinding machine for machine convertible information-bearing material.
532.1, 532.4, and 532.6, for an end retainer combined with a winding machine.
- 583 Adhesive or hook-and-pile fabric:**
This subclass is indented under subclass 579. Subject matter wherein the means to grip includes material adapted to enhance temporary bonding or cohesive connection between the coil holder and elongated material, which material includes fabrics and substances exhibiting great friction or pile adapted to interlock and grip other such material.
- SEE OR SEARCH CLASS:
24, Buckles, Buttons, Clasps, etc., subclass 306 and 31 for hook-and-barb fabric used in a fastener of general use.
428, Stock Material or Miscellaneous Articles, subclass 100 for a hook-and-barb fastener material of general use.
- 584 Material penetrating (e.g., piercing):**
This subclass is indented under subclass 579. Subject matter wherein the means to grip includes a male member adapted to transversely project through the thickness of the elongated material or a fitting (e.g., a ring) carried by the material.
- 584.1 Projection for preformed material opening:**
This subclass is indented under subclass 584. Subject matter wherein the male member is formed to pass through an existing opening in the elongated material.
- SEE OR SEARCH CLASS:
84, Music, subclasses 122+, 133, and 150 for spools peculiar to music or in combination with specific musical structure.
- 585 Edge grip pair for strip material:**
This subclass is indented under subclass 579. Subject matter wherein the means to grip includes structure adapted to grasp the opposite width sides of an elongated material having a considerably greater width from side-to-side than thickness from face-to-face.
- 586 Clamp:**
This subclass is indented under subclass 579. Subject matter wherein the means to grip includes a shiftable grasping member adapted to releasable apply a squeezing force against the elongated material.
- 586.1 Threaded or cam operator:**
This subclass is indented under subclass 586. Subject matter wherein the grasping member is shiftable by a spirally grooved or lobed operator.
- 586.2 Separable from coil holder:**
This subclass is indented under subclass 586. Subject matter wherein the means to grip includes structure removable from the coil support to grasp or release the elongated member.
- 586.3 Bodily displaced:**
This subclass is indented under subclass 586. Subject matter wherein the means to grip is bodily shiftable from one location on the spool to a second location.
- 586.4 Pivoted:**
This subclass is indented under subclass 586. Subject matter wherein the means to grip is a component arcuately shiftable between material gripping and releasing positions.

586.5 About winding or parallel axis:

This subclass is indented under subclass 586.4. Subject matter wherein the means to grip is arcuately shiftable about an axis extending in the same direction as the axis of the coil holder.

586.6 Resilient:

This subclass is indented under subclass 586.5. Subject matter wherein the means to grip is flexible or shifted by flexible structure (e.g., a spring).

587 Apertured:

This subclass is indented under subclass 579. Subject matter wherein the means to grip includes a coil holder surface defining an opening (e.g., a groove, cutout, hole, etc.), which surface retains the elongated material.

587.1 Coacting with material fitting or modification:

This subclass is indented under subclass 587. Subject matter wherein the surface defining the aperture is particularly constructed to grip a distinct element carried by the elongated material.

587.2 Slot:

This subclass is indented under subclass 587. Subject matter wherein the opening is formed as a narrow, elongated slit, typically parallel to the coil axis.

587.3 With special access:

This subclass is indented under subclass 587.2. Subject matter wherein the coil holder is designed to expose the material retention slot for gripping for convenient use (e.g., a finger opening in a spool flange adjacent to the slot).

588 Randomly oriented coil holder (e.g., portable):

This subclass is indented under subclass 570. Subject matter wherein the coil supporting structure is constructed to be: (a) conveniently transported from one location to another, and (b) free of means orienting or mounting the supporting structure as a fixture other than a handle, carrying strap, harness, or similar means by which the structure may be specially adapted to be carried by a human or animal.

- (1) Note. The disclosure of a specific, substantial base, wheels, skids, etc., or mounting structure that connects the coil support to an associated carrier, stationary or portable, is provided for as a mounted coil support.

SEE OR SEARCH CLASS:

- 206, Special Receptacle or Package, particularly subclasses 389+ for a container adapted to either: (a) hold a coil removed from the container for unwinding, or (b) have a portion of the container destroyed to provide for unwinding egress of the material.
- 223, Apparel Apparatus, subclasses 106+ for a rack, stand, or similar carrier adapted to hold sewing articles that may include a spool.

588.1 With hand or body attachment:

This subclass is indented under subclass 588. Subject matter wherein the supporting structure includes means (e.g., a belt or pocket clip), adapting the coil to be carried by a human or animal.

SEE OR SEARCH THIS CLASS, SUBCLASS:

404+, for a hand or body reel.

SEE OR SEARCH CLASS:

- 224, Package and Article Carriers, subclass 162 for a support constructed to be borne by a living being.
- 294, Handling: Hand and Hoist-Line Implements, subclasses 137+ for a hand-held article carrier.

588.2 With distinct hand grip:

This subclass is indented under subclass 588. Subject matter wherein the supporting structure includes a portion specifically designed to provide a convenient handle by which the coil holder is borne.

SEE OR SEARCH THIS CLASS, SUBCLASS:

405.2, and 405.3, for a hand or body reel.

588.3 Dispensing container:

This subclass is indented under subclass 588. Subject matter wherein the supporting structure includes a portion substantially enclosing the coil while permitting unwinding of elongated material.

588.4 Unitary folded blank:

This subclass is indented under subclass 588.3. Subject matter wherein the supporting structure is a substantially planar form designed to be bent along predetermined lines to provide a completed enclosure.

SEE OR SEARCH CLASS:

206, Special Receptacle or Package, particularly subclass 395 and 396 for a folded blank forming a container for a roll or spool.

588.5 Light occludent construction:

This subclass is indented under subclass 588.3. Subject matter wherein the coil supporting structure is enclosed forming an interior coil supporting space specially designed to exclude unwanted light into the interior.

SEE OR SEARCH THIS CLASS, SUBCLASS:

348.4, for a light occludent, single coil cartridge adapted to bear machine convertible information (e.g., image film).

SEE OR SEARCH CLASS:

396, Photography, particularly subclasses 511+, 597, 601, or 623 for a coil support in a camera or fluid treating apparatus.

588.6 With coil-supporting hub:

This subclass is indented under subclass 588.3. Subject matter wherein the supporting structure includes means disposed near the center of the coil to limit radial displacement of the coil.

590 Mounted coil holder or spindle (e.g., dispenser or mandrel):

This subclass is indented under subclass 570. Subject matter wherein the structure for supporting elongated material includes either: (a) apparatus for carrying or mounting a support

for coiled material in a particular manner, or (b) a particular coil supporting mandrel, per se.

(1) Note. This and the indented subclasses provide for apparatus that, (a) supports a coil for unwinding, (b) supports a rotatable spindle adapted to receive material by winding, or (c) a spindle, arbor, mandrel, and the like for either a winding or unwinding device, which apparatus relates to how elongated material is borne or directed as opposed to a support ancillary to a paramount drive, control, detector, stop, or manipulating apparatus provided for earlier as reeling devices, winding and unwinding machines.

(2) Note. Coil-holding spools, having no continuing relationship with a particular winding, unwinding, or reeling device, and serving as a storage member for wound material until the material is utilized are subsequently provided.

SEE OR SEARCH CLASS:

4, Baths, Closets, Sinks, and Spittoons, subclass 300.1 for a dispenser of toilet tissue combined with a specified flush closet.

40, Card, Picture, or Sign Exhibiting, particularly subclass 483, 514+, and 518+ for a coil holder with exhibiting apparatus.

84, Music, particularly subclasses 122+, 133, and 150 for a coil holder with specific musical apparatus.

223, Apparel Apparatus, subclasses 106+ for a rack, stand, or similar carrier adapted to hold sewing articles that may include a spool.

289, Knots and Knot Tying, subclass 13 and 14 for a cord holder of a knot-tying apparatus.

297, Chairs and Seats, particularly subclasses 221+ for a cover dispenser peculiar to a chair.

312, Supports: Cabinet Structure, especially subclass 34.6 and 34.8+ for a cabinet particularly adapted to support rolled toweling and the like.

396, Photography, particularly subclasses 511+, 597, 601, or 623 for a coil support in a camera or fluid treating apparatus.

- 400, Typewriting Machines, subclass 512, 609, and 613+ for a spool or roll mounting device in combination with typewriter structure.
- 591 Discrete coil positions:**
This subclass is indented under subclass 590. Subject matter wherein the coil supporting structure includes a specific formation providing either, (a) alternative, distinct coil locations within a frame, or (b) alternative frame mountings presenting the coil at different attitudes, each location or mounting being operative for winding or unwinding.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
229, for a fishing reel having a spool repositionable between winding and unwinding positions.
399+, for a reeling device providing for plural spool positions.
- 592 Infinitely variable coil positions:**
This subclass is indented under subclass 590. Subject matter wherein the coil supporting structure is adapted to mount the coil in displaced winding or unwinding positions, which positions may occur at any location between extreme limits.
- 593 Axial material delivery:**
This subclass is indented under subclass 590. Subject matter wherein either the supporting structure or a guide associated with the supporting structure provides for unwinding of the elongated material in a direction parallel to the coil axis.
- 594 Simultaneously available supplies:**
This subclass is indented under subclass 590. Subject matter wherein coil supporting apparatus is adapted to carry plural supply coils of elongated material, at least two of which are available for winding or unwinding at a given time.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
330, for simultaneously wound and unwound machine convertible information carriers.
388+, for simultaneous winding/unwinding in a reeling device.
- SEE OR SEARCH CLASS:
211, Supports: Racks, subclass 44 for a rack adapted to support a bolt or card.
- 594.1 Peripherally supported coil:**
This subclass is indented under subclass 594. Subject matter wherein the coil supporting apparatus includes a bearing portion for supporting an outer circumferential surface of at least one supply coil or spool.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
352.3+, for a peripheral drive for a machine convertible information carrier winding device.
393, for a peripheral drive for a reeling device.
420.1+, for a peripheral drive in a tension control device.
541+, for a peripheral drive in an winding machine.
595+, for a peripheral coil support.
- 594.2 Coaxial:**
This subclass is indented under subclass 594.1. Subject matter wherein the bearing portion mounts plural supply coils along a substantially common center line.
- 594.3 Coaxial coils:**
This subclass is indented under subclass 594. Subject matter wherein the supporting apparatus mounts coils along a substantially common center line.
- 594.4 Plural rows or array:**
This subclass is indented under subclass 594.3. Subject matter wherein the supporting apparatus carries substantially axially aligned coils on multiple axes.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
594.6, for a support for individual coils in plural rows.
- 594.5 Row:**
This subclass is indented under subclass 594. Subject matter wherein the supporting apparatus carries plural coils on substantially side-by-side parallel axes.

594.6 Plural rows or array:

This subclass is indented under subclass 594.5. Subject matter wherein the supporting apparatus carries plural coils on substantially side-by-side parallel axes arranged in either (a) columns, or (b) a grouping of at least three axes disposed about a center line.

SEE OR SEARCH THIS CLASS, SUBCLASS:

594.4, for a support for plural rows of coaxial coils.

595 Peripheral coil support:

This subclass is indented under subclass 590. Subject matter wherein the mounting apparatus supports the outer circumferential surface of either a spool flange or material wound on the spool.

SEE OR SEARCH THIS CLASS, SUBCLASS:

352.3+, for a peripheral drive for a machine convertible information carrier winding device.

393, for a peripheral drive for a reeling device.

420.1+, for a peripheral drive in a tension control device.

541+, for a peripheral drive in a winding machine.

594.1+, for a peripheral support for plural supply coils.

595.1 Roller or endless belt:

This subclass is indented under subclass 595. Subject matter wherein the mounting apparatus supports the spool on a rotatable wheel, cylinder, disk, or closed loop band, usually to reduce resistance to spool rotation.

596 Opposed stub spindles:

This subclass is indented under subclass 590. Subject matter wherein the apparatus for mounting includes a pair of cooperating truncated journals (spindles) and frame means disposing the journals in spaced, facing relation for reception of the ends of a coil, spindle, or spool.

SEE OR SEARCH THIS CLASS, SUBCLASS:

573.3+, for opposed spindles that are expandible or contractile.

596.1 Spindle on retractable frame arm:

This subclass is indented under subclass 596. Subject matter wherein frame means includes a member for supporting a journal for movement with respect to the remainder of the frame means to increase the spacing between the journals sufficiently to permit coil or spool replacement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

598.1, for a shiftable frame arm in a holder supporting opposite ends of a spindle.

596.2 With latch connecting spindles:

This subclass is indented under subclass 596.1. Subject matter comprising coupling means forming a releasable joint between the journals for maintaining journal spacing but permitting joint separation for replacement of the coil, spindle, or spool.

596.3 Pivoted or deflected frame arm:

This subclass is indented under subclass 596.1. Subject matter wherein one of the support portions is either, (a) connected to the remainder of the frame means by a hinge, or (b) constructed of readily bendable material, to permit journal spacing to be varied.

596.4 Retractable spindle:

This subclass is indented under subclass 596. Subject matter wherein either the mounting apparatus or journal itself is constructed in a manner permitting one journal to be readily shifted with respect to a cooperating journal (e.g., by being yieldably biased or inherently flexible) to permit coil or spool replacement.

596.5 With actuator to retract spindle:

This subclass is indented under subclass 596.4. Subject matter wherein the mounting apparatus includes an distinct operator through which force is applied for shifting a journal relative to its cooperating journal.

596.6 Helical cam or threaded actuator:

This subclass is indented under subclass 596.5. Subject matter wherein the operator includes cooperating male and female elements connected by a land (bolt and screw) that converts rotary movement of the operator into longitudinal movement of the member or journal.

596.7 Particular spindle formation:

This subclass is indented under subclass 596. Subject matter wherein special significance is attributed to the configuration, material, or mounting of a journal.

596.8 Particular frame formation:

This subclass is indented under subclass 596. Subject matter wherein special significance is attributed to the configuration, material or mounting of a housing or housing component that supports a journal.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

597.8, for a particular frame formation for a free end spindle.

598.5+, for a particular frame formation for a spindle supported at each end.

SEE OR SEARCH CLASS:

312, Supports: Cabinet Structure, especially subclass 34.6 and 34.8+ for a cabinet particularly adapted to support rolled toweling and the like.

597 Free end spindle support (e.g., cantilever):

This subclass is indented under subclass 590. Subject matter wherein the structure for supporting the elongated material includes, (a) a mandrel having a supported end, (b) an end clear of support, and (c) an intermediate coil supporting section.

- (1) Note. This and the indented subclass are the locus for a winding or unwinding shaft (spindle, mandrel, arbor, etc.) having a supported end and an opposite free end and adapted to support a coil of elongated material either directly or through an intermediate carrier (spool, core, drum, etc.).

597.1 With releasable coil retainer:

This subclass is indented under subclass 597. Subject matter comprising a latch detachably maintaining a coil or spool on the mandrel, usually to provide for convenient replacement of the coil or spool.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

571.3+, a contractile or expansible mandrel actuated in response to insertion of an article to retain the article.

597.2 Spool forms retainer part:

This subclass is indented under subclass 597.1. Subject matter wherein the supporting section of the mandrel mounts a spool provided with a specific formation (exclusive of a usual center bore, single key way, or end face) adapted to cooperate with the latch for removably mounting the spool on the mandrel.

597.3 Radially deflectable retainer:

This subclass is indented under subclass 597.1. Subject matter wherein the latch includes a coil retainer portion longitudinally extending in a direction parallel to the axis of the coil, which portion is adapted to be inwardly bent or pivoted between retain and release positions.

597.4 Removable retainer:

This subclass is indented under subclass 597.1. Subject matter wherein the latch or a significant portion thereof of the latch is separable from the mandrel to permit coil or spool replacement.

597.5 Particular spindle formation:

This subclass is indented under subclass 597. Subject matter wherein special significance is attributed to a characteristic of the mandrel.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

596.7, for a spindle arrangement employing a pair of facing supports collectively supporting a coil.

599+, for a spindle adapted to carry a coil or spool between supported spindle end portions.

597.6 Spindle-to-spool bearing or coupling:

This subclass is indented under subclass 597.5. Subject matter wherein the mandrel includes a particular formation by which the mandrel supports or is drivingly connected to a coil or intermediate member adapted to carry a coil.

597.7 Vertical:

This subclass is indented under subclass 597. Subject matter wherein the structure for supporting the mandrel mounts the mandrel substantially perpendicular to the horizon.

SEE OR SEARCH CLASS:

400, Typewriting Machines, subclass 242, 512, 609+, and 613 for a vertical stub shaft for supporting a spool in a type-writer.

597.8 Particular frame formation:

This subclass is indented under subclass 597. Subject matter wherein the structure for supporting the mandrel includes means to enclose, position, or direct the elongated material and special significance is attributed to this means.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

596.8, for a particular frame formation for opposed stub spindles.

598.5+, for a particular frame formation for a spindle supported at each end.

SEE OR SEARCH CLASS:

312, Supports: Cabinet Structure, especially subclass 34.6 and 34.8+ for a cabinet particularly adapted to support rolled toweling and the like.

598 Spindle disposed between supports:

This subclass is indented under subclass 590. Subject matter wherein the structure for supporting elongated material includes either, (a) mounting apparatus for supporting opposite end portions of an elongated mandrel, or (b) an elongated mandrel having opposite end portions by which the mandrel is adapted to be supported.

598.1 Frame with shiftable arm:

This subclass is indented under subclass 598. Subject matter wherein the mounting apparatus includes a base having a pair of cooperating

arm portions for supporting opposite ends of the mandrel, at least one of the arm portions being movable away from the other arm portion to provide for removal or replacement of a coil.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

596.1+, for a retractable arm to permit coil removal or replacement between opposed journals.

598.2 Frame with pivoted spindle:

This subclass is indented under subclass 598. Subject matter wherein the mounting apparatus includes a base having means for articulating the mandrel for movement from a coil supporting position to a coil loading or unloading position.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

229, for a spool shaft pivoted between wind and unwind positions in a fishing reel.

596.3, for a pivoted spindle of an opposed spindle pair.

598.3 Frame with removable spindle:

This subclass is indented under subclass 598. Subject matter wherein the mounting apparatus includes a base having means mounting the mandrel for convenient separation from the base for coil loading or unloading.

598.4 Shiftable spindle retainer:

This subclass is indented under subclass 598.3. Subject matter wherein the means for removably mounting the mandrel includes a keeper movable from a latching position to a second position permitting the mandrel to be removed for coil loading or unloading.

598.5 Particular frame formation:

This subclass is indented under subclass 598. Subject matter wherein particular significance is attributed to the configuration of the mounting apparatus or a component thereof spaced from the journal (e.g., a cover, guide or frame mounting structure).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

596.8, for a particular frame formation for opposed stub spindles.

597.8, for a particular frame formation for a spindle supported at only one end.

SEE OR SEARCH CLASS:

312, Supports: Cabinet Structure, especially subclass 34.6 and 34.8+ for a cabinet particularly adapted to support rolled toweling and the like.

598.6 Coil enclosure:

This subclass is indented under subclass 598.5. Subject matter wherein the mounting apparatus substantially surrounds a material portion of a coil mounting in the supports.

599 Spindle feature:

This subclass is indented under subclass 598. Subject matter wherein particular significance is attributed to a characteristic of a mandrel (spindle) having a coil supporting surface intermediate opposite ends portions adapted to be supported by a base structure.

- (1) Note. This and the indented subclasses serve as the location for a winding or unwinding mandrel (spindle, shaft, arbor, etc.) having opposite end support portions and an intermediate portion adapted to receive wound material directly or through a supporting spool or core, which mandrel can bear a close similarity to a spool but usually is detectable as a permanent or reusable component of a winding or unwinding device bearing a distinct relationship to that device.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

596.7, for a spindle arrangement employing a pair of facing supports collectively supporting a coil.

SEE OR SEARCH CLASS:

492, Roll or Roller, for details of a roll or roller that may be analogous to a coil spindle.

599.1 Telescoping or meshing surfaces:

This subclass is indented under subclass 599. Subject matter wherein the mandrel includes plural, distinct portions, one of which is partially positionable within or intermeshed with another, usually to permit variation of the length of the mandrel parallel to the winding axis (e.g., for removal or accommodation of differently proportioned frames).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

578+, for a mandrel with an axially adjustable winding surface.

599.2 Spaced coil retaining or supporting portions:

This subclass is indented under subclass 599. Subject matter wherein the mandrel includes portions separated along a length of the mandrel, which portions either axially retain or radially support the coil at axially spaced locations.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

578+, for an axially adjustable coil support.

599.3 Spindle-to-frame bearing or coupling:

This subclass is indented under subclass 599. Subject matter wherein particular significance is attributed to the mandrel distinguished by either: (a) the manner in which the spindle is borne by a supporting structure, or (b) means by which the spindle is connected to a drive or retarding member.

599.4 Spindle-to-spool bearing or coupling:

This subclass is indented under subclass 599. Subject matter wherein the mandrel includes a particular formation by which the mandrel supports or is drivingly connected to a coil or intermediate member adapted to carry a coil.

600 Spool or core:

This subclass is indented under subclass 570. Subject matter wherein the structure for supporting wound material is a portable article of manufacture or component thereof for directly bearing coiled material, usually by winding, and for temporarily storing the material until it is removed, usually by unwinding.

- (1) Note. Here the term spool is used in a generic sense to include a holder for temporarily storing a coil including a bobbin, card, cop, core (flangeless spool), drum, skein holder, etc., but excludes wound inductances, resistors, filters, etc. where the spool becomes a permanent component of a composite article, or where the spool acts as a form for deforming an elongated material removed from the spool as a completed coil.

- (2) Note. Some difficulty may arise in distinguishing a spool from a reeling device or spindle. The reeling device usually has both a supporting structure and drive, although in its simplest form, a nonrotatable hand reeling device may be distinguished only by having an additional support such as a hand grip. The spindle usually has more elaborate bearing or drive coupling than a spool, and frequently has a spool supporting surface, but generally lacks fixed axial material containment structure such as an end flange.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 118+, for a strand spool, per se.
 322, for a particular spool in a fishing reel.
 326.3, for a particular spool in endless tape or film cartridge;
 328.1, and 329.1, for a spool with removable or expandable hub;
 345+, for a particular spool in tape and film cartridges;
 376, for a particular spool of a spring powered reeling device;
 393, for a peripherally driven spool of a reeling device;
 407+, for a a particular spool in a reeling device of general use.

SEE OR SEARCH CLASS:

- 84, Music, subclasses 122+, 133, and 150 for a music roll spool combined with a drive or tracking board peculiar to a musical instrument or subcombination.
 492, Roll or Roller, for a roll detail that may be analogous to a spool.

- 493, Manufacturing Container or Tube From Paper; or Other Manufacturing From a Sheet or Web, subclass 954 for manufacturing a spool from paper-like material.

601 With cover:

This subclass is indented under subclass 600. Subject matter comprising structure for enclosing a significant portion of the spool (e.g., a protective band along the periphery of the spool or wound material).

SEE OR SEARCH CLASS:

- 206, Special Receptacle or Package, particularly subclasses 389+ that are adapted to enclose a roll or reel.
 220, Receptacles, for receptacle construction that may be appropriate to a spool covering.

602 With convolution or layer separator:

This subclass is indented under subclass 600. Subject matter wherein the spool is formed with means to maintain spacing between either: (a) adjacent convolutions, or (b) successive layers, of wound material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 536, for a convolute winding machine for winding spaced apart convolutions.

602.1 Helical pattern:

This subclass is indented under subclass 602. Subject matter wherein the means to maintain spacing includes a generally continuous ridge disposed about a winding axis of the spool with an axial offset or pitch for axially separating adjacent, congruent convolutions (e.g., by defining a helical groove for progressively storing elongated strand).

SEE OR SEARCH CLASS:

- 187, Elevator, Industrial Lift Truck, or Stationary Lift for Vehicle, subclasses 254+ for a winding or traction drum in combination with elevator structure.

602.2 With particular lead-in or crossover structure:

This subclass is indented under subclass 602.1. Subject matter wherein the means to maintain spacing includes a special portion to facilitate

disposition of the elongated material into the helical groove formed by the ridge, usually at the beginning of winding a layer of material.

602.3 Spiral groove (e.g., convolute divider):

This subclass is indented under subclass 602. Subject matter wherein the spacing means defines a groove whose locus increases radially from a central winding axis, usually for maintaining radial spacing between convolutions of a web material wound on a spool.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

327+, for a convolution separator that may at times be used to maintain spacing between convolutions of an endless web.

603 With multiple coiling areas:

This subclass is indented under subclass 600. Subject matter comprising a barrier dividing a unitary spool into separate areas, each area being adapted to store plural material convolutions or layers.

604 Openwork:

This subclass is indented under subclass 600. Subject matter wherein the spool is provided with significant surface voids between structural portions.

- (1) Note. The voids may be created in the surface of a spool hub or flange by skeletal or grid construction of rods, wire, dowels, slats, lath, netting, or perforated material provided with significant openings or spacing frequently used to facilitate fluid flow about wound material for washing, drying, dyeing, etc., or to create a large, lightweight spool.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

118.1, and 118.11, for an openwork strand spool.

407.1+, for a spool used with a drive to form a reel.

577+, for a spoke-type skein holder.

602+, for a spool with convolution separators or a spoke-type spool.

604.1 Wire hub and flange:

This subclass is indented under subclass 604. Subject matter wherein the spool is formed with a hub and radial rim formed of wire for retaining wound material.

605 Stackable:

This subclass is indented under subclass 600. Subject matter wherein a spool or spool component is particularly constructed to accommodate joining or juxtaposing with a similar spool or component (e.g., coupled spools or nested flanges).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

118.41, for axially connected strand spools.

606 With single or dominant flange:

This subclass is indented under subclass 600. Subject matter wherein the spool includes a core having either: (a) only one radial material confining rim, or (b) an end rim of significantly greater radial extent than any other radial rim.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

118.3, for a flangeless or single flanged strand spool.

607 Particular component connection:

This subclass is indented under subclass 600. Subject matter wherein special significance is attributed to means for joining components of the spool either permanently or releasably.

607.1 Hinged or slidable for collapsing:

This subclass is indented under subclass 607. Subject matter wherein components of the spool are coupled by a pivotal joint or shiftably linked elements providing for dimensional contraction of the spool from an operative to a storage position while the spool remains assembled.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

574, for a linkage system in a contractile coil holder.

577, for individual adjustable segments of a contractile coil holder.

607.2 Convertible assembly:

This subclass is indented under subclass 607. Subject matter wherein components of the spool are constructed to readily permit the spool to be reassembled from one configuration to a materially different configuration.

- (1) Note. A spool must be designed to undergo more than a quantitative reduction in hub dimension for loading and unloading coils or knockdown disassembly for placement in this subclass, but may include a flange arrangeable for accommodating different windings or providing a cover.

608 Flange to hub or another flange:

This subclass is indented under subclass 607. Subject matter wherein the joining means connects a spool rim to either: (a) a separate coil storage drum (hub), or (b) another rim.

- (1) Note. Flange or rim is used here to denote any significant protective or confining barrier protruding radially from the winding surface.

SEE OR SEARCH THIS CLASS, SUBCLASS:

118.6, for a flange connection in a strand spool.

608.1 Flange rotatable on hub:

This subclass is indented under subclass 608. Subject matter wherein the joining means connects the rim to the coil storage drum (hub) in a manner to permit arcuate movement between the rim and drum.

608.2 Mechanical joint or fastener:

This subclass is indented under subclass 608. Subject matter wherein the joining means connecting the rim to winding drum (hub) or other rim includes compound interlocking surfaces formed on at least one of the components.

- (1) Note. For placement in this and the indented subclasses, the joint should include a retaining surface transverse or oblique to the direction in which the components are introduced for assembly. Thus, a simple tapered or resilient joint

relying solely on friction or compression would be classified above.

608.3 Discrete fastener (e.g., rivet or staple):

This subclass is indented under subclass 608.2. Subject matter wherein the joining means between the flange and winding surface or other flange is maintained in assembled relation by a separate, independent anchoring element (e.g. a clamp, cotter pin, dowel, nail, rivet, or staple).

608.4 Threaded (e.g., bolt or screw):

This subclass is indented under subclass 608.3. Subject matter wherein the anchoring element is formed with spiral grooves.

SEE OR SEARCH THIS CLASS, SUBCLASS:

118.62, for a screw connection between components of a strand spool.

609.2, for threaded spool components.

608.5 Rotatable joint (e.g., threaded or bayonet fit):

This subclass is indented under subclass 608.2. Subject matter wherein the joining means connecting the flange and winding surface or other flange includes a portion formed on the flange or spool adapted to be releasably connected to another component of the spool by relative arcuate movement between the portion and component.

SEE OR SEARCH THIS CLASS, SUBCLASS:

118.61+, for an inserted flange joint in a strand spool.

608.6 Snap fit:

This subclass is indented under subclass 608.2. Subject matter wherein the joining means connecting the rim to a winding surface or another rim includes an element on one of the spool components adapted to be compressed during an initial stage of assembly until the joint is nearly completed whereupon the compression is released, often with an audible sound.

- (1) Note. This type of joint may be temporary or permanent and is usually formed as a deflected tongue or biased ball detent having a surface transverse to the direction of assembly of the components,

which surface induces stress until the transverse surface is accommodated.

608.7 Bendable tab or crimp:

This subclass is indented under subclass 608.2. Subject matter wherein the joining means connecting the rim to a separate winding surface or another rim includes a deflectable appendage or rim on one spool component deformable over a cooperating surface of another spool component.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

610.3, for crimping technique applied to a spool for purposes other than connecting the components (e.g., strengthening).

608.8 Bonded (e.g., welded or cemented):

This subclass is indented under subclass 608. Subject matter wherein the joining means between the rim and winding surface or another rim includes fusible, adhesive, or similar constituents.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

609.4, for bonding components of a spool hub.

609 Hub components:

This subclass is indented under subclass 607. Subject matter wherein the particular joining means connects elements of a winding or bearing surface of the spool, for example, (a) a complementary winding surface section with or without a flange, (b) a winding surface portion and an inner portion such as a spool bearing, or (c) multiple interior portions such as bearings.

609.1 Mechanical joint or fastener:

This subclass is indented under subclass 609. Subject matter wherein the joining means connecting the hub components includes compound interlocking surfaces formed on at least one of the components.

(1) Note. For placement in this and the indented subclasses, the joint should include a retaining surface transverse or oblique to the direction in which the components are introduced for assembly.

609.2 Threaded fastener (e.g., bolt or screw):

This subclass is indented under subclass 609.1. Subject matter wherein the joining means between the hub components is releasably maintained by a removable helically grooved fastener.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

118.62, for a similar fastener for components of a strand spool.

608.4, for a similar fastener for flange portions of a spool.

609.3 Rotatable joint (e.g., threaded or bayonet fit):

This subclass is indented under subclass 609.1. Subject matter wherein the joining means between components of the hub includes a coupling portion formed on a hub component that is releasably connected to a separate hub component by relative arcuate movement between the components.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

118.61, for a similar joint for components of a strand spool.

609.3, for a similar joint for flange-to-hub spool components.

609.4 Bonded (e.g., welded or cemented):

This subclass is indented under subclass 609. Subject matter wherein the joining means between the hub components includes fusible, adhesive, or similar constituents.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

608.8, for bonding a spool flange to a hub or another flange.

610 Particular material or material treatment:

This subclass is indented under subclass 600. Subject matter wherein special significance is attributed to either: (a) the process by which a spool is made, or (b) the construction of the spool as exhibited by the manner or material from which the spool is formed.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

118.7+, for a featured spool material in a strand spool.

SEE OR SEARCH CLASS:

428, Stock Material or Miscellaneous Articles, for material in general use.

610.1 Sheet stock:

This subclass is indented under subclass 610. Subject matter wherein the spool is constructed of an original, substantially planar material adapted to be folded, crimped, stamped, or forged into a desired shape for a spool or spool component.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

118.8, for a strand spool constructed of sheet stock.

610.2 Foldable unitary blank:

This subclass is indented under subclass 610.1. Subject matter wherein a single piece of planar stock is bent to constitute the spool.

- (1) Note. The addition of a nominal element such as a label, binder, material end fastener or the like does not bar placement in this subclass.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

588.4, for a unitary blank used to form a coil-dispensing container.

SEE OR SEARCH CLASS:

206, Special Receptacle or Package, particularly subclasses 395+ for a foldable blank for an enclosure for a removable coil.

610.3 Crimped or hemmed:

This subclass is indented under subclass 610.1. Subject matter wherein the sheet stock is strengthened by a reverse fold, bend, or corrugation.

610.4 Diverse materials:

This subclass is indented under subclass 610. Subject matter wherein the spool includes a component made of a material significantly

different from that of another component, that is, either (a) different material categories (e.g., metal, wood, glass, plastic, paper, textile, etc.), or (b) materials within the same category but with significantly different chemical composition or physical property (e.g., steel and copper metals or cast and fibrous glass).

610.5 Metal:

This subclass is indented under subclass 610. Subject matter wherein the spool is constructed of a material generally exhibiting the properties of being ductile, malleable, fusible, opaque, and a good conductor of heat and electricity, known as a metal (e.g., ferrite, aluminum, copper, zinc, etc.).

610.6 Plastic, rubber, or ceramic:

This subclass is indented under subclass 610. Subject matter wherein the spool is constructed of a material from a natural or synthetic, non-metallic, organic material capable of being readily moldable.

611 With brake or drive formation:

This subclass is indented under subclass 600. Subject matter wherein particular significance is attributed to a structure on the spool provided for transmitting torque from a drive source (clutch or coupling) or to a stationary structure (brake).

611.1 Circular rim (e.g., drum, sprocket, or ratchet):

This subclass is indented under subclass 611. Subject matter wherein the brake or drive formation includes a toroidal projection on an end face of the spool.

611.2 Noncircular bore (e.g., spline):

This subclass is indented under subclass 611. Subject matter wherein the particular spool formation includes an irregularly shaped aperture or notch for receiving a drive key, dog, or other projection to cause the spool to rotate with another member usually a rotatably powered spindle.

SEE OR SEARCH CLASS:

464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, for a particular drive connection of general use.

612 With particular bearing formation:

This subclass is indented under subclass 600. Subject matter wherein particular significance is attributed to structure by which the spool is supported.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

321, for a particular bearing in a fishing reel.

599.3, for a spindle bearing in a coil holder adapted to support opposite ends of the spindle.

SEE OR SEARCH CLASS:

384, Bearings, for a bearing of general use.

613 Particular hub or core formation:

This subclass is indented under subclass 600. Subject matter wherein particular significance is attributed to the winding surface of the spool.

(1) Note. This and the indented subclasses serve as the locus for developments of specific winding surfaces without regard to the presence or absence of a flange.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

602+, for a hub with convolution separating structure.

613.1 Irregularly shaped (e.g., tapered):

This subclass is indented under subclass 613. Subject matter wherein the hub includes a winding surface with significant variation from the surface of a right cylinder, which variation may occur in a direction parallel or transverse to the winding axis.

(1) Note. Irregularities to space convolutions of material or provide multiple winding surfaces are collected earlier.

SEE OR SEARCH CLASS:

254, Implements or Apparatus for Applying Pushing or Pulling Force, particularly subclass 374 for an irregularly shaped cable drum of a hoist or winch.

613.2 Cross sectionally:

This subclass is indented under subclass 613.1. Subject matter wherein the hub defines a winding surface with significant variation transverse to the winding axis.

613.3 Flattened (e.g., card):

This subclass is indented under subclass 613.2. Subject matter wherein the hub is substantially planar (i.e., extremely thin with respect to width and length dimensions).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

472.7, for a card or other flattened form for strand winding.

613.4 Reinforcement feature:

This subclass is indented under subclass 613. Subject matter wherein particular significance is attributed to a structural or material component added to strengthen the hub.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

118.31, for a reinforcement feature in a cop-type spool.

610.3, for spool fabrication details involving crimping or folding matter that usually strengthens a spool.

613.5 Flangeless core:

This subclass is indented under subclass 613.4. Subject matter wherein the reinforcement is applied to a hub free of a radially projecting rim.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

118.32, for tube material feature in a cop-type spool.

614 Flange feature:

This subclass is indented under subclass 600. Subject matter wherein particular significance is attributed to a rim projecting radially from a central material bearing portion of the spool to restrain or protect the wound material.

(1) Note. Flange features designed for axial adjustment of the winding surface, to receive and retain an end of the wound material, or to separate individual coil

layers or winding surfaces are provided for earlier.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 578+, for an adjustable spool that may involve a significant flange.
- 602.3, for a grooved spool flange for receiving web material.
- 608+, for a flange connection feature in a spool.

614.1 Reinforcement:

This subclass is indented under subclass 614. Subject matter wherein particular significance is attributed to a structural or material component added to strengthen the rim.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 118.31, for a reinforcement feature in a copy-type spool.
- 610.3, for spool fabrication details involving crimping or folding matter that usually strengthens a spool.

615 MATERIAL GUIDE OR GUARD:

This subclass is indented under the class definition. Apparatus or corresponding method for directing longitudinal movement of a flexible material of indeterminate length by either: (a) engaging the material to change the direction of movement of the material, or (b) confining movement of the material within limited variation with respect to a desired path.

- (1) Note. Where a guide or guard is claimed with no significant guide structure but merely in terms of the composition of material or treatment, the guide or guard will be classified in the appropriate composition or treatment class.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 157+, for a strand guide.
- 326.4, for a particular guide in an endless tape cartridge.
- 346+, for a particular guide in a coil-to-coil cartridge.
- 377, for a particular guide in a spring wound reeling device.
- 397+, for a particular guide or guard in a general use reeling device.

548+, for a particular guide or guard in a convolute winding machine.

566, for a particular guide or guard in an unwinding machine.

SEE OR SEARCH CLASS:

- 16, Miscellaneous Hardware, subclasses 2+ for a brushing or lining thimble for an opening or socket; or subclasses 108+ for a ferrule, ring, or thimble applied to the exterior opening of a rod, pipe, conduit, strand, or other device.
- 26, Textiles: Cloth Finishing, subclasses 71+ for cloth finishing that may involve specific guide structure as a component.
- 28, Textiles: Manufacturing, subclasses 232+ for a stripping guide used to clear running lengths of thread.
- 30, Cutlery, subclass 127 for a twine guide combined with cutlery.
- 34, Drying and Gas or Vapor Contact With Solids, subclass 117, 118, and 153 for a guide for directing strand or web subjected to a Class 34 art process or apparatus.
- 40, Card, Picture, or Sign Exhibiting, subclasses 341+ for a copyholder where the copy is advanced relative to a static guide by manual force applied directly to the copy, or to guide or advance material relative to a viewing locus; or an indicator (e.g., line guide or pointer) relative to the copy and a support therefor.
- 43, Fishing, Trapping, and Vermin Destroying, subclass 24 for a line guide or tip for a fishing rod.
- 57, Textiles: Spinning, Twisting, and Twining, subclasses 115+ for a strand guiding device used in the twisting of strands.
- 66, Textiles: Knitting, particularly subclass 126, 130, 146, 151, and 158 for a strand guide in a specified knitting process or apparatus.
- 83, Cutting, subclasses 438+ for passive guide means in a cutting device.
- 112, Sewing, subclasses 136+ for a work manipulating guide combined with a specified sewing process or apparatus, or subclass 302 for a thread guiding or

- handling means combined with a specified sewing process or apparatus.
- 139, Textiles: Weaving, subclass 221+ for apparatus to facilitate threading of a specified weaving apparatus.
- 178, Telegraphy, subclass 42 for a guide combined with the recorder or printer of a telegraph system.
- 226, Advancing Material of Indeterminate Length, may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel driving or reel stopping means, etc.), subclass 196.1 for a passive guide combined with a material feeder.
- 227, Elongated-Member-Driving Apparatus, subclass 150 for a guide to move a workpiece relative to the elongated-member-driving apparatus.
- 254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 389+ for a guide used for a load bearing line of a winch or hoist.
- 289, Knots and Knot Tying, subclass 15 for a cord guide in a knot-tying apparatus.
- 396, Photography, subclass 646 for a film guide for a fluid treating apparatus.
- 400, Typewriting Machines, subclass 248 for a guide combined with typewriter structure.
- 474, Endless Belt Power Transmission Systems or Components, subclass 140 for a belt guide having a surface in sliding contact with belt.
- 492, Metal Working, particularly subclass 4, 5, 21, and 22+ for roller structure of general application.

615.1 Variable guide path:

This subclass is indented under subclass 615. Subject matter wherein the guide device is mounted to accommodate changing conditions of the material to either: (a) direct the material along different paths, or (b) reorient itself to maintain substantially the same guide path.

- (1) Note. The reorient limitation is not intended to include a guide combined with means to shift the guide for a particular material distribution.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 157.1, for an oscillatable or reciprocable guide for a strand.

615.11 Fluid suspension:

This subclass is indented under subclass 615. Subject matter wherein the guide uses liquid or gas to float the material above the guide.

SEE OR SEARCH CLASS:

- 34, Drying and Gas or Vapor Contact With Solids, subclasses 640+ for a fluid support or guide for a running length of a flexible sheet, web or strand of treated material contacted by gas or vapor circulation apparatus.
- 65, Glass Manufacturing, subclasses 182.1+ for a fluid support means for an article or preform.
- 226, Advancing Material of Indeterminate Length, may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel driving or reel stopping means, etc.), subclasses 97.1+ for fluid current means to advance the material.
- 261, Gas and Liquid Contact Apparatus, subclass 80 for a contact device for a traveling strip.
- 406, Conveyors: Fluid Current, for apparatus and methods conveying solid material or articles which are guided or supported to travel along a path by means of or with assistance of a fluid current.

615.12 Turning guide:

This subclass is indented under subclass 615.11. Subject matter wherein the guide changes the direction of the movement of the material.

615.2 Rotatable:

This subclass is indented under subclass 615. Subject matter wherein the guide device is mounted for rolling contact with the elongated material.

SEE OR SEARCH CLASS:

226, Advancing Material of Indeterminate Length, may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel driving or reel stopping means, etc.), subclasses 168+ for orbitally traveling material engaging surface(s).

615.21 Angled turning guide for a web:

This subclass is indented under subclass 615. Subject matter wherein the guide has a change of direction axis inclined to a fabric, screening, or strip material's lateral width.

615.3 With material confining portion:

This subclass is indented under subclass 615. Subject matter wherein the guide device includes structure to retain guide path control of the material in plural directions (e.g., a guide engaging a flat side and edge of a strip or surrounding a moving cord).

615.4 With particular guide surface formation or treatment:

This subclass is indented under subclass 615. Subject matter wherein special significance is attributed to the shape or finish of the material contacting surface of the guide device.

899 MISCELLANEOUS:

This subclass is indented under the class definition. Apparatus or method not provided for in any of the preceding subclasses.

CROSS-REFERENCE ART COLLECTIONS

900 PARTICULAR APPARATUS MATERIAL:

Apparatus and method for winding or unwinding, and including components or a wound workpiece wherein significance is attributed to a particular material, e.g., composition, physical property, manner of incorporation, etc.

901 FIGURE EIGHT WINDING:

Apparatus or corresponding method for winding an elongated member along a path traced in one direction (e.g., clockwise) about a first axis and about a second axis in the opposite direction (e.g., counterclockwise) to produce each convolution.

902 LINE LOADER FOR FISHING REEL:

Apparatus or corresponding method specifically adapted to transfer a length of fishing line from a supply coil to a fishing reel or similar take-up.

903 DRUM FOR A WINCH OR HOIST:

A spoollike member for storing convolutions of a wound line (cable, chain, etc.), which member is adapted to serve as a component of a mechanism for moving a disconnectable load.

- (1) Note. The spoollike member may either accumulate or feed material and is known in various environments by numerous names such as cathead, hawser, windlass, etc.

SEE OR SEARCH CLASS:

254, Implements or Apparatus for Applying Pushing or Pulling Force, for the combination of a drum or capstan adapted to wind or unwind a disconnectable load.

904 WATER SKI REEL:

Apparatus or corresponding method particularly adapted to store an elongated material used to pull a water skier or similar load behind a boat.

905 WINDER WITH STORAGE CHAMBER (E.G., FOR DEODORANT, PAPER, ETC.):

Apparatus or method in which: (a) a winding or unwinding device is provided with a space particularly designed to store an ancillary, non-wound article (e.g., a deodorant container in a paper dispenser, clothespin receptacle in a clothesline reel, etc.), or (b) a nonwound device provided with a space to store a coiled article (e.g., a pencil with a compartment for coiled writing paper).

SEE OR SEARCH CLASS:

401, Coating Implements With Material Supply, particularly subclass 13 for a specific writing implement combined with a paper dispenser.

906 STATIC CHARGER OR DISCHARGER:

Method or apparatus for adding or removing static electrons from a device or indefinite

- length material being subjected to winding, unwinding, tensioning, or guiding.
- 907 VIBRATION CREATION OR DAMPENING:**
Method or apparatus for generating or reducing motion reverberation accompanying winding, unwinding, tensioning, or guiding.
- 908 FLUID TREATMENT OR HANDLING:**
Method or apparatus for the application or control of liquid or gaseous material directly associated with winding, unwinding, tensioning, or guiding a running indefinite-length material.
- 909 HEATING OR COOLING:**
Method or apparatus for regulating the temperature of a device for or a material being subjected to winding, unwinding, tensioning, or guiding.
- 910 CONVOLUTION TIGHTENER OR LOOSENER:**
Apparatus or corresponding method acting on an existing coiled length material to increase (tighten) or decrease (loosen) the number of convolutions in the coil.
- 911 CUTTER:**
A component of a reeling apparatus or winding machine adapted to sever, score, perforate, or slit the elongated material.
- (1) Note. This cross-reference collection should not collect patent copies properly placed in regular cutter subclasses of this class.
- 912 INDICATOR OR ALARM:**
Apparatus or corresponding method for denoting a physical characteristic or issuing a signal related to winding, unwinding, tensioning, or guiding (e.g., a scale, dial, counter, or similar device conveying the length, tension, capacity or other condition of an elongated material or an element of a winding or unwinding device) or an instrument to give visual or audible notice of the occurrence of a selected winding, unwinding, tensioning, or guiding condition.
- 913 SAFETY DEVICE:**
Method and apparatus particularly designed to reduce or eliminate a specific personnel or material hazard associated with the winding, unwinding, tensioning, or guiding of elongated material.
- (1) Note. This collection provides for a shield, guard, acoustical containment or the like, but not intended to include machine components designed solely to protect apparatus (e.g., a slip coupling, pressure relief valve or motor thermostat or typically occurring housings, coverings, flanges, light occludent construction, etc. commonly provided to prevent usual damage).
- 914 SPECIAL BEARING OR LUBRICATION:**
Apparatus or corresponding method for winding, unwinding, guiding, or tensioning elongated material in which particular significance is attributed to structure or treatment of a surface to enhance support of an element or reduce friction normally inherent to movement of such an element.
- SEE OR SEARCH CLASS:
184, Lubrication, appropriate subclasses for lubrication of general and numerous special uses.
384, Bearings, appropriate subclasses for bearings of general and numerous special uses.
- 915 COIL GRIPPER:**
A reusable implement or machine component adapted to releasably grasp a wound length of material.
- 916 HAND TOOL:**
A manually supported and operated implement adapted to wind, unwind, tension, or guide an elongated material or to facilitate such an operation.
- 917 ACCOMMODATING SPECIAL MATERIAL OR ARTICLE (E.G., ANTENNA):**
Apparatus or corresponding method to which particular significance is attributed to a construction or step of a process distinctive because of a certain elongated material or group of such materials to be wound, unwound, tensioned, or guided.

918 Web material (e.g., thermal insulation):

This subclass is indented under subclass 917. Subject matter in which the certain elongated material has a width appreciably greater than thickness.

919 Ground cover (e.g., tarp):

Subject matter under 918 in which the material to be wound or unwound is particularly extremely wide and is adapted to cover a large horizontal area (e.g., a sports field, garden, or swimming pool).

920 GLASS STRAND WINDING:

This subclass is indented under the class definition. Subject matter constructed for winding glass filaments onto a take-up.

FOREIGN ART COLLECTIONS

The definitions for FOR 100-110, FOR 112 -FOR 132, FOR 135, FOR 137, FOR 138, FOR 140-FOR 147, FOR 151-159, FOR 168-FOR 193, and FOR 195 below correspond to the definitions of the abolished subclasses under Class 242 from which these collections were formed. See the Foreign Art Collections schedule for specific correspondences. [Note: The titles and definitions for indented art collections include all the details of the one (s) that are hierarchically superior.

FOR 100

Foreign Art Collections for winding cordage material, as thread, upon spools or holders having flaring heads, the thread traverse varying in the different layers. This subclass is limited to winding a single spool.

FOR 101

Foreign Art Collections for spoolers for winding a plurality of spools.

FOR 102

Foreign Art Collections for inventions not otherwise classifiable for winding cordage material--such as thread, twine, cord, rope, etc.--upon a suitable core or holder of the bobbin type--that is, holders of circular cross-section, cylindrical or cone-shaped and with or without flanges or disk-shaped heads, including therefore, bobbins, cop tubes, pins, jack-spools, quills, or like structures. The traverse of the thread is substantially of the same length.

FOR 103

Foreign Art Collections for devices including means for controlling the disposition of turns or coils of thread during winding to prevent the piling of successive turns upon one another, thus preventing the formation of bands or "ribbons" of wound thread in the yarn-package.

FOR 104

Foreign Art Collections for devices for cutting devices adapted to or in combination with bobbin and cop winding.

FOR 105

Foreign Art Collections for devices not otherwise classifiable adapted for winding the type of bobbins employed in sewing-machine shuttles and designed for use upon or in connection with sewing-machines.

FOR 106

Foreign Art Collections for sewing machine shuttle winders provided with thread-cutters.

FOR 107

Foreign Art Collections for sewing machine shuttle winders provided with stop-motion devices.

FOR 108

Foreign Art Collections for sewing machine shuttle winders for winding very short or disk-shaped bobbins.

FOR 109

Foreign Art Collections for sewing machine shuttle thread-winding devices having means in the form of a pad, roll, plate, or other presser for compacting or shaping the thread upon the bobbin.

FOR 110

Foreign Art Collections for winding wire on a bobbin type of holder for storage purposes or for a commercial article.

FOR 112

Foreign Art Collections for winding bobbins of the universal or Fiji type--all machines, therefore, having means for imparting an incremental or rotary movement to the cop or ball at the end of each thread traverse

movement or sufficient delay in the traverse movement of the thread guide so that the coils of one layer shall be laid just outside and parallel with the corresponding coils of the layer last wound, crossing the same and binding the coils and the loop at the ends firmly down, thus preventing the cop from breaking down and making it self-supporting. In the product the layers are symmetrical, each having the same number of coils and each coil being outside of rather than on top of the corresponding coil below it or in the last layer.

FOR 113

Foreign Art Collections for mechanisms including a rotating cop-tube upon which strand material is wound, and a thread-laying guide, which guide and tube are reciprocated relatively to each other along the axis of the tube and parallel to said axis, whereby the thread is wound on the cop-tube in successive layers into a definite form or cop, in which the thread guide is associated with a ring-rail.

FOR 114

Foreign Art Collections for mechanisms in which the traverse of the thread laying guide is substantially the length of the cop-tube, whereby a cop having longitudinal layers is produced.

FOR 115

Foreign Art Collections for devices including means for modifying the amplitude or placement of the traverse of the thread laying guide as successive layers are wound to produce a yarn-package tapered at one or both ends.

FOR 116

Foreign Art Collections for mechanisms in which the traverse of the thread laying guide is short relative to the length of the cop-tube, and the extent of reciprocation of the guide relative to the tube shifts progressively along the axis of the cop-tube, whereby a cop is produced having layers of thread which are conical with respect to the axis of the tube.

FOR 117

Foreign Art Collections for devices including means for winding a reverse of thread on a cop-tube by an initial short traverse of the thread laying guide prior to winding the service thread of the yarn-package.

FOR 118

Foreign Art Collections for devices in which the initial traverse mechanism is operated by cam means supplementary to the mechanism for winding the service thread.

FOR 119

Foreign Art Collections for devices in which the initial traverse is produced by varying the traverse mechanism of the mechanism for winding the service thread.

FOR 120

Foreign Art Collections for devices including additional means to vary the mechanism which effects shifting of the traverse along the axis of the cop-tube.

FOR 121

Foreign Art Collections for devices in which either or both of the traverse and gain for the service wind may be modified.

FOR 122

Foreign Art Collections for devices including a rotating cop-tube upon which tube strand material is wound, and a strand laying guide reciprocable relatively to the tube along the axis of said tube, the tube being formed of a substantially cylindrical portion and a frusto-conical portion in which one diameter of the frusto-conical portion is equal to the cylinder diameter and is joined to the cylinder, the extent of reciprocation of said guide being equal to the cylindrical length of said tube, in which the extent of reciprocation moves along the axis of the tube in only one direction, whereby a yarn-package having one frusto-conical end is formed.

FOR 123

winding thread, yarn, etc., in conical layers, and thereby gradually building up a cop, ball, or mass of thread or yarn upon a suitable cop tube, shell, or spindle or other core or holder; also devices which wind both cylindrical and conical layers. Winding

devices to be classifiable under “cone wind” must have mechanism for producing a relative longitudinal progressive movement between the cop or thread mass and the thread traverse guide.

FOR 124

Foreign Art Collections for devices including means for winding a reserve of thread on a cop-tube by an initial short traverse of the thread laying guide prior to winding the service thread of the yarn-package.

FOR 125

Foreign Art Collections for detectors and stops for cone-winding devices comprise (1) mechanism for detecting imperfections in the thread or undue tension thereof in winding; (2) mechanism for stopping the machine upon such detection or tension; (3) stop mechanism operating upon stoppage, breakage, exhaustion, etc., of the thread or for indicating such failure in the thread supply; and (4) stop mechanism operating when the winding is completed. This subclass contains only detectors or stop motions of the first two groups, not otherwise classifiable.

FOR 126

Foreign Art Collections for devices for stopping the cone-winding of the thread governed by and operating upon breakage, undue tension, stoppage or exhaustion of the thread supply.

FOR 127

Foreign Art Collections for devices for automatically stopping the winding of the cop or cone mass when fully wound or when a predetermined amount has been wound.

FOR 128

Devices for winding crossed spiral coils by a quick traverse movement of the thread guide or of the core upon which the cop is wound.

FOR 129

Foreign Art Collections for devices for cone-winding a plurality of cops or bobbins.

FOR 130

Foreign Art Collections for devices usually provided with cones or rollers for pressing

and shaping the thread on or about the cone as it is wound.

FOR 131

Foreign Art Collections for spindles, mounting thereof, driving, and other features pertaining thereto, adapted for use in cone-winding machines and not classifiable in spinning.

FOR 132

Foreign Art Collections for machines adapted to wind a plurality of bobbins simultaneously and not provided for in the preceding subclasses.

FOR 135

Foreign Art Collections for means operable in connection with winding machines, brought into operation by failure of the running thread, to unite a reserve thread to the last end of the thread on the winding bobbin.

FOR 137

Foreign Art Collections for bobbin-winding devices not otherwise classifiable which detect the presence of knots, slubs, splits, accumulations of gum, lint, waste, or other imperfections or inequalities in the thread being wound or undue tension thereof.

FOR 138

Foreign Art Collections for devices for stopping the winding upon the breakage or exhaustion of thread or for indicating such failure in the thread supply.

FOR 140

Foreign Art Collections for detectors and stops controlled by the breaking or exhaustion of the thread for machines operating to wind a plurality of threads upon a single bobbin by ordinary winding methods, there being no twisting of the threads together, as in spinning machines.

FOR 141

Foreign Art Collections for stop devices for arresting the winding when the bobbin is fully wound or loaded.

FOR 142

Foreign Art Collections for load-stop devices adapted to machines for winding a

plurality of threads upon a single bobbin, but without twisting them.

FOR 143

Foreign Art Collections for bobbin-winding machines having automatic devices for ejecting the bobbin when wound.

FOR 144

Foreign Art Collections for devices for winding a plurality of threads upon a single bobbin without the twisting characteristic of spinning machines.

FOR 145

Foreign Art Collections for bobbin-winding machines in which the thread layer or guide has a quick traverse movement relative and longitudinal to the bobbin or in which the bobbin is reciprocated relatively to the thread guide, so as to lay the thread on the bobbin in crossing spirals, producing a cross or crisscross wind. In this subclass the number of convolutions, coils, or spirals varies somewhat in the different layers, usually decreasing in number toward the periphery.

FOR 146

Foreign Art Collections for devices under subclass 43 including means for modifying the amplitude or placement of the thread laying guide as successive layers are wound to produce a yarn-package tapered at one or both ends.

FOR 147

Foreign Art Collections for devices under subclass 43 wherein the strand is guided by engaging a cam groove in a drum.

FOR 151

Foreign Art Collections for devices, usually hand or foot operated, for lifting the spool or bobbin from winding relation with the operating mechanism, usually comprising a rotating drum, spindle or seat, which drives the spool by frictional contact.

FOR 152

Foreign Art Collections for thread receivers and driving means therefor, the connection between the same being separable.

FOR 153

Foreign Art Collections for devices under subclass 46.2 wherein the bobbin or cop is altered so as to be engaged by the driving means.

FOR 154

Foreign Art Collections for driving connections specially adapted for use with cop tubes of paper or similar material.

FOR 155

Foreign Art Collections for driving connections including separate means to connect and disconnect the same.

FOR 156

Foreign Art Collections for clutch operator centrifugally controlled by the speed of the driving means.

FOR 157

Foreign Art Collections for connection of the head and socket type in which the head is resilient.

FOR 158

Foreign Art Collections for connection of the head and socket type in which the socket is resilient.

FOR 159

Foreign Art Collections for resiliency of the socket produced by an annular coil spring.

FOR 168

Foreign Art Collections for devices for winding rope, cord, thread, yarn, or other strand material not otherwise classifiable and excluding wire-winding.

FOR 169

Foreign Art Collections for device including a support for a rotatable coil of wound strand material, in which the direction of rotation of the coil during unwinding is the same as the direction during winding.

FOR 170

Foreign Art Collections for device having means to prevent liquids or gases entrained in or applied to the material from entering the support-mounting and/or actuating mechanism.

FOR 171

Foreign Art Collections for device combined with means to convey a new portion of material through or into the device.

FOR 172

Foreign Art Collections for device including a first rotatable set of substantially rigid elongated elements wherein each element has a material contacting face; said first set cooperating with a second rotatable set of substantially rigid elongated elements, also having material contacting faces and being substantially coaxial with the first set in such a way that the elongated elements of the first set pass between the elongated elements of the second set as each set rotates about its own axis, in which device the relative movement of the material contacting faces of the first set with respect to the material contacting faces of the second set serves to advance material axially therealong.

FOR 173

Foreign Art Collections for device wherein all of the elongated elements of each of the respective sets is maintained in the same special relationship to each of the other elements in the same set.

FOR 174

Foreign Art Collections for device wherein the elements of one of the sets have angular movement about a line parallel to the axis about which the set rotates.

FOR 175

Foreign Art Collections for device wherein the elements of at least one of the sets moves toward and away from the axis of rotation autonomously of the other elements of the same set.

FOR 176

Foreign Art Collections for device wherein the strand material is wound around at least two coil supporting means which rotate about individual, spaced-apart axes.

FOR 177

Foreign Art Collections for device wherein a single coil of the material lies along the faces of at least two of the drums.

FOR 178

Foreign Art Collections for device wherein all of the individual axes of the drums also revolve simultaneously about an axis common to all of the axes.

FOR 179

Foreign Art Collections for device wherein the face of at least one of the drums is modified to comprise a screw-thread like configuration, whereby the configuration, due to the rotation of the drum about its axis, acts to progress the coils axially of the drum.

FOR 180

Foreign Art Collections for device having material engaging means to move the coils along the support in a path parallel to the axis of rotation.

FOR 181

Foreign Art Collections for device wherein the material traverser is a part which moves parallel to the axis of rotation of the material contacting surface.

FOR 182

Foreign Art Collections for devices for storing rope, cord, thread, yarn or other strand material on sheaves, the sheaves being shiftable toward each other but normally urged apart and the strand material being wound around the several sheaves.

FOR 183

Foreign Art Collections for cordage-winding apparatus provided with cutting devices and all cutters therefor, except those adapted for sheet or strip winding devices.

FOR 184

Foreign Art Collections for detector and stop devices not otherwise classifiable for cordage-winding machines.

FOR 185

Foreign Art Collections for winding cordage upon cards, boards, or other forms or cores, except those of the bobbin, spool, or reel type or forms and frames for winding armature coils or wire.

FOR 186

Foreign Art Collections for winding heddle or seine needles.

FOR 187

Foreign Art Collections for tatting-shuttle winders or winding.

FOR 188

Foreign Art Collections for winding thread or yarn into hanks or skeins, but excluding devices that wrap or interlace the strands of the wound hank or skein to form a special package.

FOR 189

Foreign Art Collections for devices under the class definition for effecting relative traverse of a guide and a core upon which material, passing from the guide, is wound.

FOR 190

Foreign Art Collections for devices in which the traverse guide is moved by an eccentric or crank.

FOR 191

Foreign Art Collections for devices in which the traverse guide is moved by a screw threaded shaft.

FOR 192

Foreign Art Collections for devices in which the shaft is doubly, oppositely screw threaded.

FOR 193

Foreign Art Collections for devices which include means for reversing the direction of travel of the traverse guide.

FOR 195

Foreign Art Collections for devices in which cam means effects the movement of the traverse guide.

END